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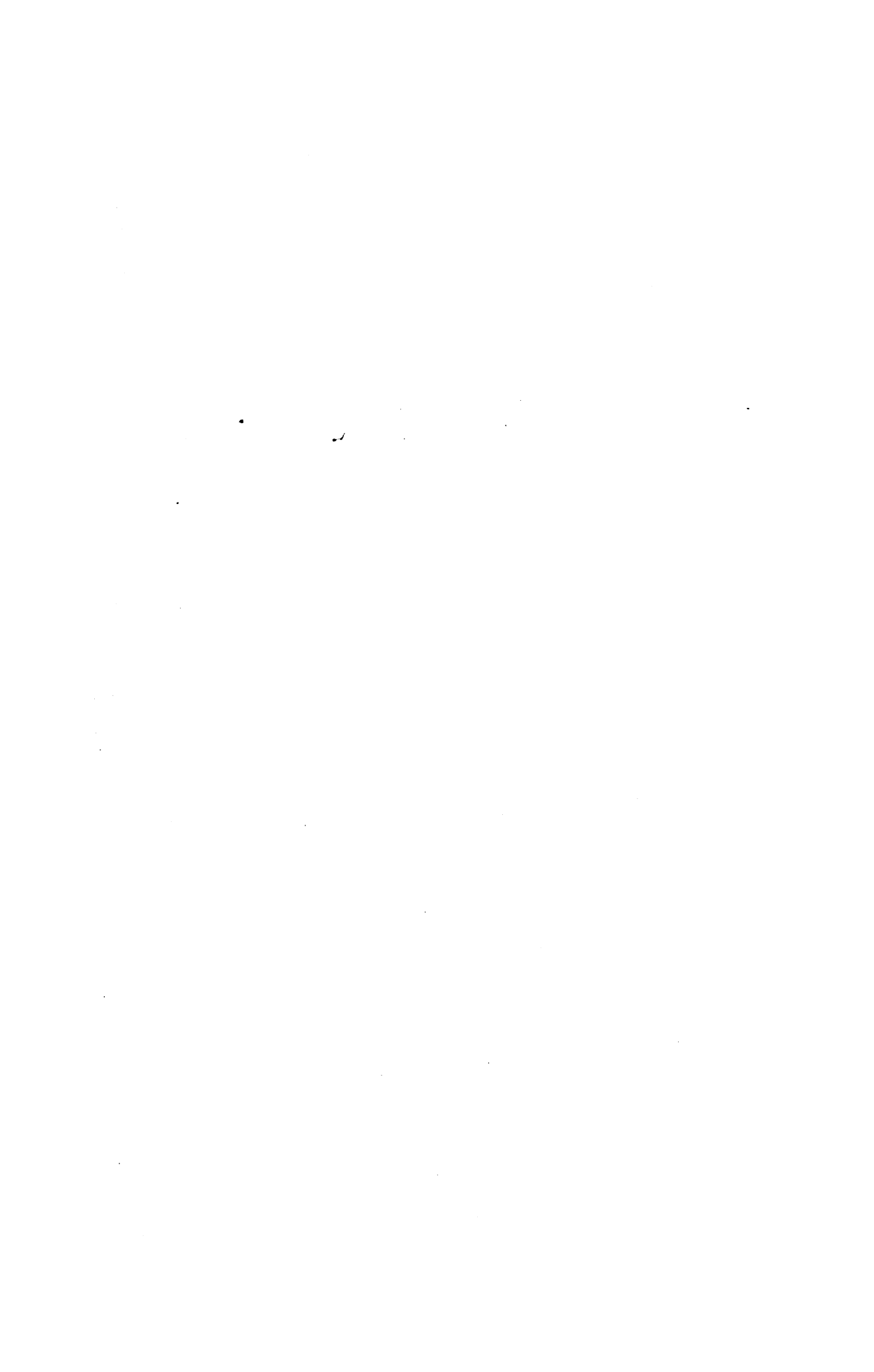
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OAP  
PILLISCHE









1851,



1855.



1862.

Illustrated

# DESCRIPTIVE CATALOGUE

OF

ACHROMATIC MICROSCOPES,

TELESCOPES, OPERA, RACE AND FIELD GLASSES,

AND OTHER

13195

OPTICAL, PHILOSOPHICAL,

MATHEMATICAL, SURVEYING,

AND

STANDARD METEOROLOGICAL

INSTRUMENTS,

MANUFACTURED BY

**M. PILLISCHER,**

Optician and Scientific Instrument Maker

TO

HER MAJESTY THE QUEEN,

THE PRINCE AND PRINCESS OF WALES, THE DUKE OF EDINBURGH, AND THE ROYAL FAMILY;

HER MAJESTY'S ARMY MEDICAL DEPARTMENT,

THE PRINCIPAL UNIVERSITIES,

ST. THOMAS'S, ST. BARTHOLOMEW'S, AND OTHER METROPOLITAN AND PROVINCIAL HOSPITALS,

ETC., ETC.,

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## A D D R E S S .

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THOUGH the following pages are intended to supply the place of a Catalogue only, it will be found, on careful perusal, that they contain much useful information and descriptive explanation, necessary for the amateur and student in the selection of any particular instrument or apparatus, and which I hope will make this little work more acceptable to my numerous and kind patrons than a mere "Price List."

Being a practical working optician and scientific instrument maker, assisted by the most skilled and experienced workmen, I can confidently assert that the *best class work only* is made in my establishment; and having the advantage of extensive workshops on the premises, under my own superintendence, I can undertake to execute any order to satisfaction and with despatch.

The Microscope has always formed a special branch of my business, the improvement of which, with its accessory apparatus and object glasses, occupies my constant care and attention: a few extracts which I append, from several authors of standard works on the Microscope, will amply testify this assertion.

I would call particular attention to my new series of high-power correction and immersion Object Glasses, which I have only recently improved and perfected; for penetrating and defining power they cannot be surpassed. For the convenience of Microscopists I have also added a classified list of nearly 3000 microscopic preparations, of the most recent and rarest objects, as a guide for their selection.

I would also direct attention to the sections in my Catalogue referring to standard Meteorological and Surveying, Mathematical and Philosophical Instruments, which, for the excellence of workmanship and as instruments of precision, I can recommend with the greatest confidence.

The finding of any special article will be considerably facilitated by the table of Contents and copious Index, the numbers of which refer to the marginal numbers in the Catalogue.

In returning my most sincere thanks to my countless and kind patrons for past favours, and the unlimited confidence which they have bestowed upon me, I beg to assure them that no effort on my part shall be spared, through strict attention to their orders, superiority of workmanship, and, above all, moderation in price, to merit the continuance of their esteemed patronage and kind recommendation.

M. PILLISCHER.

88, NEW BOND STREET, W.

May, 1873.



"As the author is far from desiring to single out particular opticians to the exclusion of others of high merit, he thinks it right here to name several other makers of Achromatic Microscopes, whose instruments are favourably known to him; foremost amongst these, Mr. Pillischer (New Bond Street) is a right to special mention, as working his own achromatic objectives, and bringing them to very high perfection."—*Carpenter's "Microscope and its Revelations,"* p. 105.

"Mr. Pillischer (New Bond Street) is favourably known for the excellency of his instruments. His No. 1 Microscope is of good workmanship, and somewhat novel in design . . . The straight body rests on a great part of its length upon a straight bar of solid brass, ploughed into a groove for the reception of the rack which is attached to the body; the groove being of such a form that the rack is held firmly while it glides smoothly through it. This is so firm, and gives such a steady, uniform motion, as almost to render the fine adjustment unnecessary . . . The binocular bodies are inclined at a smaller angle to one another than in most makers, which, with the range of motion given to the eye-pieces by the rack and pinion, enables observers, whose eyes differ greatly in separation, to use the instrument with equal facility. The prism is so well set that it illuminates both fields with equal intensity . . . In short, no instrument can be better adapted than this to all the ordinary wants of the pathologist or the skilled microscopist."—*Hogg's "Microscope,"* p. 92.

"In every respect it is a compact, handy instrument, and well finished in its mechanical details.

"The body is furnished with a draw-tube, by which its length can be increased about 6 inches; coarse and fine adjustments; movable mechanical stage, as in the larger instruments; two eye-pieces; superior objectives of 1 inch and  $\frac{1}{4}$  inch focus, of  $15^\circ$  and  $80^\circ$  aperture, condenser, polarising apparatus and selenite . . . diaphragm, &c.; packed in a mahogany case for the price of £15. 15s.

"This instrument takes its place among the best of its class."—*Hogg's "Microscope,"* p. 93.

"The Student's Microscope last described is one of the cheapest instruments that has yet been offered to the public, the work quite equals that of his larger stands."—*Quekett's "Practical Treatise on the Use of the Microscope,"* 3rd edition, p. 110.

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FIG. 1.

1. Large Improved Microscope Stand, with coarse and fine adjustments and graduated draw-tube (moved by rack and pinion) to the body, rack and pinion stage, with one and one-quarter inch motions, in rectangular directions, sliding and rotating object-holder, and sliding spring clamp, secondary stage for holding and centreing achromatic condenser, polarising and other apparatus, plane and concave mirrors, revolving diaphragm and Nos. 1, 2, 3, eye-pieces . . . . . £30 0 0
- 1\*. Ditto, ditto, with Pillischer's new improved Revolving Con-  
centric Goniometer Stage . . . . . 32 10 0

*For Apparatus and Object Glasses, see page 10.*



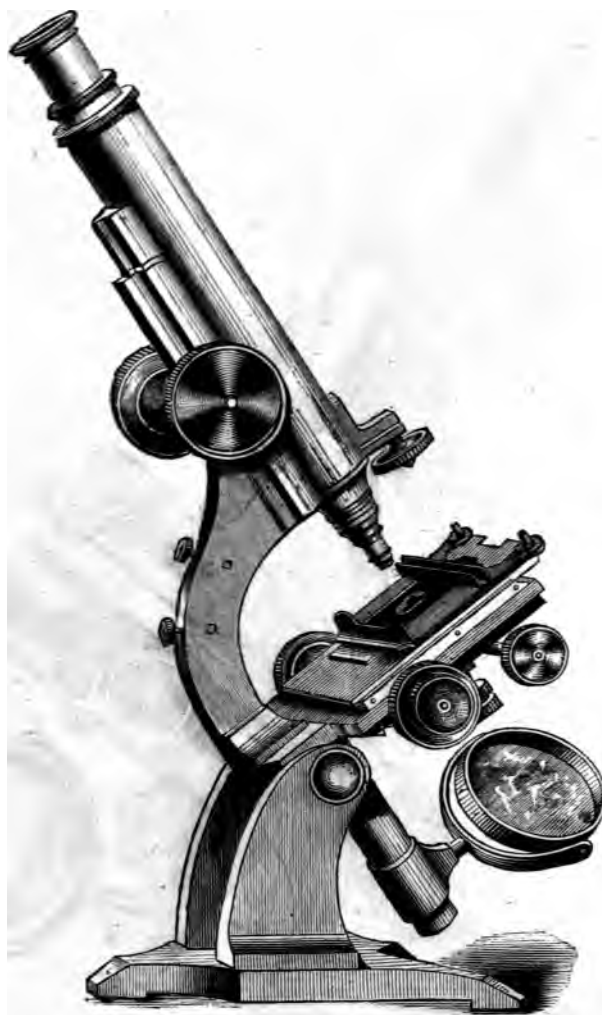


FIG. 2.

2. **Improved Smaller Microscope Stand**, with coarse and fine adjustments and graduated sliding draw-tube to the body, rack and pinion stage, with one-inch motion in rectangular directions; sliding and rotating object-holder, and sliding spring clamp, secondary stage, with centring motions, plane and concave mirrors, revolving diaphragm, and Nos. 1, 2, eye-pieces . £16 10
- 2\*. **Ditto**, with concentric Goniometer stage . . . . . 20 0

*For Apparatus and Object Glasses, see page 10.*



FIG. 3.

3. Improved Smaller Microscope Stand, with Wenham's binocular arrangement, in every respect similar to Fig. 2, with two sets of No. 1 and No. 2 eye-pieces . . . . . £22 0 0
- 3\*. Ditto, with concentric Goniometer stage . . . . . 25 10 0

*For Apparatus and Object Glasses, see page 10.*

**Pillischer's Improved Medical Microscope.**

Inclusive of Object Glasses, Apparatus, and Case, as manufactured by him and supplied to Her Majesty's Army Medical Department.



FIG. 4.

4. **This Microscope**, which is a size smaller than No. 2, has coarse and fine adjustments and graduated draw-tube to the body, rack and pinion stage, with three-quarter inch motion in rectangular directions, sliding and rotating object-holder and sliding spring clamp, plane and concave mirrors, revolving diaphragm, Nos. 1 and 2 eyepieces, one-inch object glass, 25 degrees angular aperture, and one-quarter inch 100 degrees, condenser for opaque objects, live box, and upright mahogany case, with drawer for objects, &c., complete . . . £20 0 0
- 4\*. **The above Microscope Stand only**, with Nos. 1 and 2 eye-pieces . . . 12 12 0
- 4†. **Ditto ditto**, with a plain Stage, sliding clamp movement instead of a rack and pinion, all the rest the same as above, Fig. 4. . . 7 10 0

**Best Students' Microscopes,**  
Inclusive of Object Glasses, Apparatus and Case.



FIG. 5.

5. No. 1. **Improved Compound Microscope**, having coarse and fine adjustments to the body, a best rack and pinion movable stage half-inch in rectangular directions, concave and plane mirrors, and revolving diaphragm; the apparatus supplied with this instrument consists of Nos. 1 and 2 eye-pieces, one inch and one-quarter inch object-glasses of 15 and 80 degrees angular aperture, a live box, stage forceps, condenser for opaque objects, polarising apparatus and Selenite, and a best made Spanish mahogany or oak case, with drawer for objects, &c. . . . . £15 15 0
6. No. 2. **Same size Microscope** with a plain stage, and all the rest the same as above . . . . . 10 10 0
7. No. 3. **The Microscope Stand**, in every respect the same as No. 2, with one eye-piece, one inch and one-quarter inch object-glasses, a condenser for opaque objects, and a plain mahogany case without drawer . . . . . 7 7 0
- 7\*. **A Concentric Revolving Stage** to Nos. 2 and 3 stands, extra . . . . . 2 0 0

## Prices of Apparatus to Pillischer's Best Students' Microscopes.

	£	s.	d.		£	s.	d.
8. <b>Wenham's Binocular arrangement</b> , with rack and pinion adjustment to draw-tubes, and one eye-piece . . . . .	4	10	0	18. <b>Frog Plate</b> for exhibiting the circulation of the blood . . . . .	0	5	6
9. <b>Third eye-piece</b> . . . . .	0	15	0	19. <b>Spotted Lens</b> for dark ground illumination, with low powers . . . . .	0	10	6
10. <b>Fourth ditto</b> . . . . .	0	17	6	20. <b>Camera Lucida</b> . 7s. 6d. and . . . . .	0	18	0
11. <b>Bull's-eye Condenser</b> for opaque objects . . . . .	0	8	6	21. <b>Micrometer for the eye-piece</b> , with adjusting screw . . . . .	0	12	6
12. <b>Live Box</b> . . . . .	0	4	6	22. <b>Ditto for Stage</b> , divided into 100ths and 1000ths of an inch . . . . .	0	6	0
13. <b>Stage Forceps</b> . . . . .	0	5	6	23. <b>Compressorium</b> . . . . .	0	18	0
14. <b>Polarising Apparatus</b> and <b>Selenite</b> . . . . .	1	10	0	24. <b>Brooks' Double Nose-piece</b> . . . . .	1	5	0
15. <b>Parabolic Reflector</b> for dark ground illumination . . . . .	1	5	0	25. <b>Achromatic Condenser</b> , simple form for illuminating objects of delicate structure . . . . .	2	10	0
16. <b>Glass Stage</b> with cavity . . . . .	0	1	0	26. <b>Set of Dark Wells and Holders</b> . . . . .	0	10	6
17. <b>Brass Pliers</b> . . . . .	0	2	0				

## Pillischer's £5 Prize Medal Microscope.



FIG 6.

The only Microscope shown at the International Exhibition, 1862, which has been specially awarded for novelty of construction, excellence of workmanship and cheapness.

"An excellent instrument, fit for almost any description of scientific investigation. A marvel of cheapness; the stage movement and the object-glasses being worth, without the stand, the whole of the money."—*Lancet*, May 26th, 1862.

"We have carefully examined the instrument which Mr. Pillischer designates his £5 Prize Medal Microscope, and find its merits of a very high order. The quarter-inch shows the *Pleurosigma Hippocampus* beautifully, and works well on a Podura Scale. The half-inch has a flat field and excellent definition. Several which we examined stood tests that we scarcely thought it fair to apply, and the one-inch is a thoroughly good working power."—*Intellectual Observer*, February, 1863.

Also see, *Microscopical Journal*, July, 1862, and (Appendix) in CARPENTER'S *Microscope and its Revelations*.

Many testimonials have also been received from persons of high scientific attainments, to whom these Microscopes have been supplied, in commendation of their excellent quality and cheapness.

27. **Microscope Stand**, with coarse and fine adjustments, concave mirror and revolving diaphragm, can be inclined to any angle, the lever stage movement, invented by M. Pillischer, is especially useful in observing live Diatomacæ, &c. One eye-piece condenser for opaque objects, and set of object glasses, which divide into 1-inch and  $\frac{1}{2}$ -inch powers of excellent quality, the whole packed in a neat mahogany case, with lock and key and handle (Fig. 6) . . . . . £5 0 0
28. **The above Microscope**, with the addition of a plane mirror, second eye-piece, live box, stage forceps, polarising apparatus, combined of two Nicol's prisms and a Selenite . . . . . 7 0 0

The following Additional Apparatus can also be added :

	£	s.	d.		£	s.	d.
29. <b>Wenham's Binocular arrangement</b> , with rack and pinion adjustment to draw-tubes, and one eye-piece . . . . .	4	10	0	35. <b>Camera Lucida</b> (with prism) . . . . .	0	18	0
30. <b>Third eye-piece</b> . . . . .	0	12	6	36. <b>Ditto ditto</b> , tinted reflector . . . . .	0	7	6
31. <b>Fourth ditto</b> . . . . .	0	15	6	37. <b>Parabolic Reflector</b> for dark ground illumination . . . . .	1	1	0
32. <b>Eye-piece Micrometer</b> . . . . .	0	10	6	38. <b>Compressorium</b> . . . . .	0	15	0
33. <b>Stage ditto</b> . . . . .	0	4	0	39. <b>Set of Three Dark Wells and Holder</b> . . . . .	0	10	0
34. <b>Frog Plate</b> for exhibiting the circulation of the blood . . . . .	0	5	6	40. <b>Brass Pliers</b> . . . . .	0	1	6
				41. <b>Glass Stage</b> with cavity . . . . .	0	1	0

Pillischer's New St. Thomas's Hospital Microscope.



FIG. 7.—ONE-THIRD THE ORIGINAL SIZE.



"Physiological Laboratory,

"St. Thomas's Hospital,

"29th December, 1871.

"Dear Sir,—I have been wishing to call and report on my use of your £5 Microscope which you sent me for examination some time ago, but as I am unable to call upon you to-day, and cannot allow another day to pass, I write to say that I am much pleased with the instrument—it is very steady—the stage is most commodious, which will be a great advantage in our work, and the object-glass is everything I could desire.

"Mr. PILLISCHER."

"Yours faithfully,

"JOHN HARLEY.

"The instrument is of excellent workmanship, is moderate in price, and deserves to be generally known. . . . One of the two stages supplied with the Microscope is a new and exceedingly ingenious contrivance of the maker. Considering the simplicity of the mechanism, we are surprised how well the object keeps in focus under a high power."—*The Lancet*, 23rd March, 1872.

"A new model by an excellent maker is before us, Pillischer's St. Thomas's Hospital Microscope. This instrument is of a most convenient size for the medical student, or, as a clinical microscope, for the wards of a hospital. . . . And consists of two dark bronze uprights and tripod stand with rack and fine adjustments, and stage suitable for clinical work and large enough for dissecting upon; eye-piece and quarter-inch object glass of 80 degrees aperture. The whole instrument is well-made; the rack is so good, that the one-eighth inch can be focussed by it with ease, without making use of the fine adjustment. The cost is £5. With such good and cheap instruments as these, English students need not to go to foreign makers, especially as the English instrument forms the basis of a perfect microscope. For fifteen shillings extra, a mechanical stage can be added, consisting of levers, having an action similar to the movements of a parallel ruler, which is so easy of adjustment, that it can be worked under the eighth-inch objective with the hands—a great advantage in a clinical microscope. . . . The great features of the instrument are its good construction and its cheapness."—*The British Medical Journal*, May 4th, 1872, page 478.

42. The Microscope, as constructed by M. PILLISCHER and supplied for the use of St. Thomas's Hospital, is represented on Page 8. It consists of a well-made and firm brass stand partly bronzed; it has coarse and fine adjustments—the former of sufficient length to admit of very low powers being used—revolving diaphragm, concave and plane mirrors, one eye-piece and a quarter-inch object-glass, 80 degrees angular aperture, Fig. 7. Price £ s. d. 5 0 0
43. The above Microscope, with the addition of a binocular adaptation, one eye-piece, a one-inch object-glass, 15 degrees angular aperture, live box, condenser for opaque objects, polarising apparatus, and a well-made mahogany case 10 10 0
44. Pillischer's New Collateral Stage is adapted at the small extra charge of 0 15 0

Prices of Apparatus, &c., as supplied with the £10. 10s. Microscope, showing the advantage in ordering the Microscope complete :

	£	s.	d.
45. Binocular Adaptation . . . . .	3	10	0
46. 1 Eye-piece . . . . .	0	12	6
47. 1-in. Object Glass, 15 degrees . . . . .	1	1	0
48. Live Box . . . . .	0	3	6
49. Condenser for opaque objects . . . . .	0	8	6
50. Polarising Apparatus . . . . .	1	5	0
51. Mahogany Case . . . . .	0	12	6
	7	13	0
Microscope as above . . . . .	5	0	0
Total . . . . .	12	13	0

Saving effected, £2. 3s.

The following Additional Apparatus are also supplied with the St. Thomas's Hospital Microscope.

	£	s.	d.		£	s.	d.
52. Third Eye-piece . . . . .	0	12	6	57. Do. (Dr. Beal's) . . . . .	0	7	6
53. Fourth do. . . . .	0	15	0	58. Brooke's Double Nose-piece . . . . .	1	1	0
54. Stage Forceps . . . . .	0	4	6	59. Parabolic Reflector . . . . .	0	18	6
55. Frog Plate . . . . .	0	5	6	60. Dark Ground Illuminator for low powers . . . . .	0	7	6
56. Camera Lucida (Wollaston's) . . . . .	0	18	6				



## Pillischer's New Series of Achromatic Object Glasses,

Having large Angle of Aperture and great Defining and Penetrating Power.

	Object Glasses.	Angular Aperture.	Magnifying Power with the various Eye-Pieces.				Price.	Lieberr-kuhns.
			A.	B.	C.	D.		
61.	4 inch.	9 degrees	10	16	30	35	£ 1 10 0	
62.	3 "	12 "	14	22	37	60	1 10 0	
63.	2 "	15 "	20	35	60	90	2 10 0	15 6
64.	1½ "	22 "	28	45	72	120	2 10 0	15 6
65.	1 "	25 "	40	65	110	175	2 10 0	14 0
66.	¾ "	80 "	95	155	270	430	5 0 0	10 6
67.	⅔ "	55 "	142	230	375	655	4 0 0	
68.	⅕ "	95 "	142	230	375	655	5 0 0	
69.	⅔ "	100 "	195	310	540	850	5 0 0	
70.	⅕ "	130 "	320	510	700	910	6 0 0	
71.	⅕ "	140 "	425	675	900	1,200	7 10 0	
71*	⅕ "	150 "	600	870	1,200	2,000	9 10 0	
71†	⅕ "	160 "	780	1,025	1,550	2,480	12 0 0	
72.	⅕ "	150 "	950	1,620	2,800	3,500	15 10 0	

NOTE.—The Object Glasses are all fitted with the Microscopical Society's Standard Screw.

\*.\* All Object Glasses of this series, above 1-inch, have a screw adjustment for covered and uncovered objects.

## Prices of Object Glasses

Of small angle of aperture, without adjustment, for covered or uncovered objects.

								£	s.	d.
73.	3-inch;	10 degrees	angular aperture	.	.	.	.	.	1	10 0
74.	2 "	14 "	" "	.	.	.	.	.	1	10 0
75.	1½ "	15 "	" "	.	.	.	.	.	1	10 0
76.	1 "	15 "	" "	.	.	.	.	.	1	5 0
77.	1 "	18 "	" "	.	.	.	.	.	1	10 0
78.	¾ "	55 "	" "	.	.	.	.	.	2	10 0
79.	⅔ "	60 "	" "	.	.	.	.	.	3	3 0
80.	⅕ "	75 "	" "	.	.	.	.	.	2	10 0
81.	⅕ "	80 "	" "	.	.	.	.	.	3	3 0
82.	⅕ "	100 "	" "	.	.	.	.	.	4	10 0
83.	⅕ "	110 "	" "	.	.	.	.	.	5	0 0

## Prices of Apparatus to Pillischer's First-Class Microscopes.

84.	Wenham's Binocular Arrangement; with rack and pinion adjustment to draw-tubes, and one eye-piece	6 6 0
85.	Third Eye-piece	0 15 6
86.	Fourth ditto	0 17 6
87.	Kelner's Orthoscopic ditto, giving double the usual field, equal to the power of third and fourth	1 5 0
88.	Reverend C. Kingley's Illuminator, with diaphragms	3 5 0
89.	Reid's Hemispherical Condenser, with adjustable apertures	2 0 0
90.	Improved Achromatic Condenser, with series of apertures and stops for illuminating objects of delicate structure	5 0 0
91.	Amici's Prism on Stand, with jointed arms, for condensing an oblique pencil of light	£1 10s. and 2 2 0
92.	Parabolic Condenser, for dark ground illumination, with adjustable stop	1 10 0

93. Large Spotted Lens, for dark ground illumination with low powers	£	s.	d.
94. Wenham's Truncated Parabola, in brass box	0	12	6
95. Polarising Apparatus of two Nichol's Prisms and Selenite	2	2	0
96. Tourmalins, from	0	15	0
97. Large Bull's-eye Condenser on stand, with double motions	1	2	6
98. Stage Condenser	0	18	0

### M. Pillischer's New Correction and Immersion Object Glasses,

Of extra large Angular Aperture and great Defining and Penetrating Power.

Object Glasses.	Angular Aperture.	Magnifying Power with the various Eye-Pieces.				Price.		
		A.	B.	C.	D.			
$\frac{1}{8}$ inch	145 degrees	430	680	910	1,200	£	s.	d.
						7	10	0
$\frac{1}{12}$ "	165 "	610	875	1,210	2,000	9	10	0
$\frac{1}{16}$ "	170 "	790	1,030	1,560	2,490	12	0	0
$\frac{1}{20}$ "	170 "	955	1,630	2,810	3,500	15	10	0
$\frac{1}{25}$ "	175 "	1,150	1,690	2,970	3,990	16	10	0
$\frac{1}{35}$ "	176 "	1,480	1,895	3,190	4,200	21	0	0
$\frac{1}{50}$ "	176 "	1,800	2,250	3,310	4,550	25	0	0

FIG. 115.

118. Micro-Spectroscope, direct vision, with adjusting slit, second stage and reflecting prism to obtain second spectrum . . . . . 5 10 0

#### Prices of Cases to Nos. 1, 2, 3, and 4 Microscopes.

119. Spanish mahogany or oak case, with two extra boxes for apparatus, &c., to No. 1 Microscope . . . . . 5 0 0
120. Spanish mahogany or walnut plate-glass case, with four drawers for holding apparatus, &c., to ditto . . . . . 7 15 0
121. Spanish mahogany case, with two extra boxes for apparatus, &c., to Nos. 2 and 3 Microscopes . . . . . 3 10 0
122. Spanish mahogany or walnut plate-glass case, with four drawers for apparatus, &c., &c., to ditto . . . . . 6 10 0
123. Spanish mahogany case, with one extra box for apparatus, &c., to No. 4\* Microscope . . . . . 2 15 0
124. Upright mahogany case, with drawer for objects, &c., to No. 4† Microscope . . . . . 1 12 6

## Instruments and Materials used for preparing Microscopical Objects.

		£	s.
125.	Machine for cutting Wood Sections . . . . .	.	0 18
126.	Instrument for cutting circles of thin glass . . . . .	.	1 10
127.	Writing Diamond or for cutting thin glass . . . . .	.	0 8
128.	Diamond for cutting plate glass, from . . . . .	.	0 18
129.	Machine for making cells of gold size, &c. . . . .	.	0 6
130.	Brass Table and Spirit Lamp for heating objects . . . . .	.	0 7
131.	Wooden Forceps for holding the glass slides when warm . . . . .	.	0 2
132.	Injecting Syringe in morocco case . . . . .	.	0 12
133.	Glass Troughs for viewing the circulation in plants, &c., from . . . . .	.	0 3
134.	Glass Slides with hollows . . . . .	.	0 1
135.	Set of Animalculæ Tubes in case . . . . .	.	0 3
136.	Deane's Gelatine Medium . . . . .	per bottle	0 1
137.	Canada Balsam . . . . .	.	0 1
138.	Asphalt . . . . .	"	0 1
139.	Gold Size . . . . .	"	0 1
140.	Thin Glass in squares . . . . .	per oz.	0 4
141.	Ditto in circles . . . . .	"	0 6
142.	Plate Glass Slides with ground edges . . . . .	per dozen	0 1
143.	Ditto ditto . . . . .	per gross	0 10
144.	Plate Glass Slides, unground edges . . . . .	"	0 5
145.	Wooden Slides with hole in the centre . . . . .	per dozen	0 1
146.	Cells, various sizes, for injections . . . . .	"	0 2
147.	Ditto ditto fixed to glass slips . . . . .	"	0 4
148.	Small Air Pump, square, in morocco case . . . . .	.	0 12
149.	Ditto ditto 5-inch plate . . . . .	.	0 18
150.	Coloured Labels for covering Object Slips . . . . .	per 100	0 1
151.	Collecting Bottles, various sizes . . . . .	per dozen, 1s. 6d., 2s. and	0 2
152.	Capillary Bottles . . . . .	"	0 5
153.	Coddington Lenses, mounted in German silver . . . . .	12s. 6d. and	0 15
154.	Ditto ditto solid silver . . . . .	18s. 6d. and	1 1
155.	Magnifiers of Three Lenses, mounted in Tortoiseshell . . . . .	10s. 6d. to	0 15
156.	Ditto ditto horn . . . . .	3s. 6d. to	0 6

## Books on the Microscope.

157.	Beale—"How to work with the Microscope" . . . . .	.	1 1
158.	Ditto "The Microscope in its application to Practical Medicine" . . . . .	.	1 1
159.	Hogg's "History of the Microscope" . . . . .	.	0 7
160.	Davies' "On mounting Microscopic Objects" . . . . .	.	0 2
161.	Carpenter—"The Microscope and its Revelations" . . . . .	.	0 12
162.	Griffith and Henfrey's "Micographic Dictionary" . . . . .	.	2 5
163.	Quekett's "Practical Treatise on the Use of the Microscope" . . . . .	.	0 12
164.	Lankester—"Half-hours with the Microscope" . . . . .	.	0 2
165.	Ditto ditto (coloured plates and gilt-edged) . . . . .	.	0 4
166.	Schacht's "The Microscope and its Application, &c." . . . . .	.	0 6
167.	Pritchard's "A History of Infusoria" . . . . .	.	1 16

## Dissecting Instruments.



	£	s.	d.
Fig. 1. Straight Forceps . . .	0	3	0
" 2. Cross Action . . .	0	4	6
" 3. Microtome, or Cutting Forceps . . .	0	5	6
" 4. Spring Scissors . . .	0	7	6
" 5. Needle Holder . . .	0	3	0
" 6 & 7. Curved Scissors . . .	0	5	6
" 8. Straight Scissors . . .	0	3	0
" 9. Double Needle Hook . . .	0	3	0

	£	s.	d.
176. Fig. 10 & 11. Curved & Straight Needle . . .	0	3	0
177. " 12 to 22. Scalpels, of various forms, each . . .	0	3	0
178. " 23. Spring Forceps . . .	0	4	6
179. " 24. Valentin's Knife . . .	0	17	6
180. " 25. Case Containing 8 various Dissecting Instruments . . .	1	14	0
181. " Ditto ditto containing 12 . . .	2	6	0
182. " Ditto ditto containing 18, and Valentin's Knife . . .	4	5	0

## Pocket Magnifying Lenses and Hand Reading Glasses.

WHEN SHUT.

Fig. 185.

WHEN OPEN.



Fig. 187.



Fig. 188.



Fig. 189.



Fig. 190.



Fig. 191.



Fig. 193.



Fig. 192.



			£	s.	d.
183.	Stanhope Lenses mounted in Ivory	from	0	4	6
184.	Ditto ditto " German Silver		0	5	6
185.	Coddington Lenses " "	12s. 6d. and	0	15	6
186.	Ditto ditto " Solid Silver	18s. 6d. and	1	5	0
187.	Horn Magnifiers, single, double, or triplets	from 2s. to	0	6	6
188.	Tortoise Shell ditto, ditto ditto	from 4s. 6d. to	0	15	6
189.	Ditto ditto, ditto ditto, with cylindrical lenses, having perfectly flat field	from	0	15	6
190.	Horn Magnifiers, with two sets of Lenses, used for botanical purposes, in various sizes	from 5s. 6d. to	0	12	6
191.	Hand Reading Glasses, mounted in German silver or oxidised metal frames, ebony handle	from 3s. 6d. to	1	1	0
192.	Hand Reading Glasses, mounted in buffalo horn frames with handles,	from 3s. 6d. to	1	5	0
193.	Ditto ditto, square, with cylindrical lenses, giving a very flat field	from 12s. 6d. to	2	10	0
194.	Hand Glasses for viewing large photographs and paintings, showing objects with stereoscopic effect, as used in various picture galleries, from 6 inches to 10 inches diameter	from £2 to	3	10	0

### Pillischer's Improved Cabinets for Microscopic Objects.



FIG. 198.

By the introduction of a material which is unaffected by either heat or damp, M. PILLISCHER guarantees that the drawers of these Cabinets are free from the usual defects of warping; the specimens lie flat in lined drawers, which are provided with an ivory knob and two porcelain labels for writing on.

		£	s.	d.
195.	A Mahogany Cabinet to hold 250 objects	3	0	0
196.	A ditto ditto to hold 500 objects	4	10	0
197.	Spanish mahogany or oak Cabinet with glass front to hold 600 objects	5	10	0
198.	Ditto ditto to hold 1,000 objects	8	0	0

Larger Cabinets to order.

### Mahogany and Card-Board Boxes for Objects.

199.	Mahogany Box to hold 6 dozen objects, with lock and key	.	.	0	12	6	
200.	Ditto ditto 12 dozen	"	.	1	1	0	
201.	Ditto ditto 18 dozen	"	.	1	10	0	
202.	Card-board boxes to hold 6 objects	.	.	0	0	4	
203.	Ditto ditto 12	"	.	0	0	8	
204.	Ditto ditto 24	"	.	0	1	0	
205.	Single racks for objects in mahogany	.	.	per foot	0	0	4
206.	Double ditto ditto	.	.	"	0	0	8
207.	Polished Deal Box, in which the objects lie flat—to hold 6 objects	.	.	"	0	1	6
208.	Ditto ditto	"	"	12	0	2	6
209.	Ditto ditto	"	"	36	0	5	6
210.	Ditto ditto	"	"	72	0	12	6
211.	Ditto ditto	"	"	144	0	17	6
212.	Ditto Mahogany	"	"	6	0	2	6
213.	Ditto ditto	"	"	12	0	3	6
214.	Ditto ditto	"	"	36	0	8	6
215.	Ditto ditto	"	"	72	0	17	6
216.	Ditto ditto	"	"	144	1	15	0
217.	Book Cabinet with Elastic bands to keep the objects in position—to hold 72	"	"	"	0	5	6

**Pillischer's Celebrated Reading and Microscope Lamps.**

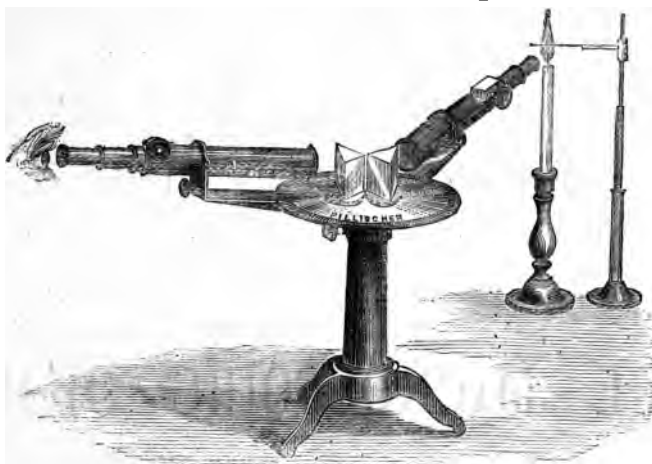
FIG. 222.

These Lamps are very handsome in construction and burn the Common Colza or kindred oil ; both as reading or microscope lamps they surpass any other in brilliancy : steadiness of light and economy in burning. For Tropical climates they are invaluable, they can be adopted to burn perfectly steady under the punkah.

	German Silver.			...	Silver Plated on German Silver.			Brass
	£	s.	d.		£	s.	d.	
218. Large Size	2	2	0	...	4	2	0	1 1
219. Large Size, made of Extra Strong Metal	2	10	0	...	4	10	0	1 5
220. Middle Size	1	15	0	...	3	5	0	0 18
221. Small Size	1	5	0	...	2	10	0	0 13
222. An Extra Large Size, giving a very powerful Light	3	3	0	...	5	10	0	1 11

*NOTE.*—A Special Illustrated Catalogue sent post free on application.

## Spectroscopes and Apparatus for the Spectrum Analysis.



225

223. No. 1. Student's Spectroscope, one prism 60°, two achromatic telescopes, one with adjusting slit and one eye-piece, packed in a polished mahogany case . . . . .	£ s. d.
	5 5 0
224. No. 2. Spectroscope on firm Stand, with divided circle 6 inches diameter, two achromatic telescopes with adjustment for the use of prisms of different dispersions, one prism 60°, second stage, and reflecting prism in the field, one eye-piece, packed in mahogany case . . . . .	8 10 0
225. No. 3. Spectroscope on firm Brass Stand of the best construction, with divided circle 9 inches diameter, two achromatic telescopes with adjustment, two prisms 60°, two eye-pieces, packed in mahogany case . . . . .	15 0 0
226. No. 4. Ditto ditto ditto with four prisms, so constructed that additional prisms can be used if required . . . . .	20 0 0
** Larger Spectroscopes made to order.	
227. Pocket Spectroscope with adjustable slit, one draw, in morocco case . . . . .	1 15 0
228. Ditto ditto, with achromatic lenses . . . . .	2 5 0
229. Adopting Ditto to the Microscope for showing spectra of microscopic objects . . . . .	0 10 0
330. Pocket Spectroscope with two draws, with prisms of great dispersive power, adjusting slit, achromatic lenses, one and a-half inches long when shut, in morocco case . . . . .	2 15 0
231. Adopting Ditto to Microscope . . . . .	0 10 0
232. Micro-Spectroscope Eye-Pieces, for direct vision to show double spectra, in the form of an eye-piece, in case . . . . .	5 10 0
233. Ditto ditto, with Achromatic Lenses . . . . .	5 15 0

## Objects for the Micro-Spectroscope.

234. Cylindrical Tubes containing Liquids, hermetically sealed, to illustrate the application of the micro-spectroscope to botany, mineralogy, chemistry, medicine, &c., &c. . . . . each	0 1 6
235. Ditto ditto in sets, case included . . . . . from 15s. to	1 5 0

## Works on the Spectroscope, Natural Philosophy, &amp;c.

236. Roscoe's Treatise on Spectrum Analyses . . . . .	1 1 0
237. Sorby's Ditto ditto . . . . .	
238. Ganot's Elementary Treatise on Physics . . . . .	0 15 0
239. Brooke's Natural Philosophy . . . . .	0 12 6
240. Deschanel's Ditto 4 Parts . . . . .	0 18 0
241. Noad's Students' Text Book of Electricity . . . . .	0 12 6
&c., &c.	



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Special attention is requested to the *transparent injections*, which are prepared expressly for me by a foreign (German) gentleman, which for their superiority cannot be equalled.

If a selection of objects is desired, they can be sent, carefully packed, and kept on approval for three days, or longer, according to the arrangements made.

Signification occurring in the List : .

*Op.*, Opaque.

*Pol.*, Polariscope.

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3	„ <i>parvula</i>
4	„ <i>subsessilis</i>
5	„ <i>ventricosa</i>
6	<i>Actynocyclus undulatus</i>
7	„ <i>sedenarius</i>
8	„ <i>Ralfsii</i>
9	<i>Amphipleura Danica</i>
10	„ <i>pellucida</i>
11	<i>Amphiprora alata</i>
12	<i>Amphora affinis</i>
13	„ <i>salina</i>
14	„ <i>ovalis</i>
15	„ <i>hyalina</i>
16	<i>Arachnoidiscus Ehrenbergii</i>
17	„ <i>Indicus</i>
18	<i>Aulacodiscus formosus</i>
19	„ <i>Oreganus</i>
20	„ <i>crux</i>
21	<i>Asteromphalis heptactis</i>
22	<i>Bacillaria paradoxa</i>
23	<i>Berkeleya fragilis</i>
24	<i>Biddulphia aurita</i>
25	„ <i>Baileyi</i>
26	„ <i>Tuomeyi</i>
27	„ <i>pulchella</i>
28	<i>Camphylodiscus Argus</i>
29	„ <i>costatus</i>
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31	„ <i>spiralis</i>
32	„ <i>clypeus</i>
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35	„ <i>scutellum</i>
36	<i>Cocconema cymbiforme</i>
37	„ <i>lanceolatum</i>
38	<i>Coscinodiscus centralis</i>
39	„ <i>cingulatus</i>
40	„ <i>sol</i>
41	<i>Cyclotella Kutzingiana</i>
42	<i>Cymatopleura Solea</i>
43	<i>Oraspedodiscus coscinodiscus</i>
44	„ <i>elegans</i>
45	<i>Cymbella affinis</i>
46	„ <i>Ehrenbergii</i>
47	„ <i>Helvetica</i>
48	„ <i>maculata</i>
49	„ <i>obtusa</i>
50	„ <i>Scotica</i>
51	„ <i>ventricosa</i>

52	<i>Denticula obtusa</i>
53	„ <i>tenuis</i>
54	<i>Doryphora ampiceros</i>
55	<i>Diatoma elongatum</i>
56	„ <i>grande</i>
57	„ <i>vulgare</i>
58	<i>Diatomella Balfouriana</i>
59	<i>Epithemia sorex</i>
60	„ <i>turgida</i>
61	„ <i>ventricosa</i>
62	<i>Encyonema caespitosum</i>
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91	„ <i>cuspidata</i>
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93	„ <i>rhomboides</i>
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95	„ <i>serjans</i>
96	<i>Nitzschia Brebissonii</i>
97	„ <i>minutissima</i>
98	„ <i>sigma</i>
99	„ <i>tænia</i>
100	„ <i>plana</i>
101	„ <i>dubia</i>
102	„ <i>lanceolata</i>
103	„ <i>scalaris</i>
104	<i>Odontidium Harrisonii</i>
105	„ <i>hyemale</i>

106	<i>Odontidium mesodon</i>
107	<i>Orthosira arenaria</i>
108	" <i>Dickeii</i>
109	" <i>orichalcea</i>
110	<i>Pinnularia acuminata</i>
111	" <i>alpina</i>
112	" <i>cardinalis</i>
113	" <i>Cyprinus</i>
114	" <i>interrupta</i>
115	" <i>nobilis</i>
116	" <i>viridis</i>
117	<i>Pleurodesmium Brebissonii</i>
118	<i>Pleurosigma angulatum</i>
119	" <i>acuminatum</i>
120	" <i>attenuatum</i>
121	" <i>Balticum</i>
122	" <i>elongatum</i>
123	" <i>fasciola</i>
124	" <i>formosum</i>
125	" <i>Hippocampus</i>
126	" <i>intermedium</i>
127	" <i>lacustre</i>
128	" <i>littorale</i>
129	" <i>macrum</i>
130	" <i>quadratum</i>
131	" <i>Spencerii</i>
132	" <i>strigilis</i>
133	" <i>strigosum</i>
134	" <i>transversale</i>
135	<i>Rhabdonema arcuatum</i>
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137	<i>Stauroneis acuta</i>
138	" <i>gracilis</i>
139	" <i>pulchella</i>
140	<i>Schizonema comoides</i>
141	" <i>Dillwynii</i>
142	" <i>molle</i>
143	" <i>Smithii</i>
144	<i>Stephenodiscus Ægyptiacus</i>
145	" <i>Ralfsianum</i>
146	<i>Surirella biseriata</i>
147	" <i>gemma</i>
148	" <i>minuta</i>
149	" <i>ovalis</i>
150	" <i>ovata</i>
151	" <i>salina</i>
152	" <i>splendida</i>
153	" <i>striatula</i>
154	" <i>lata</i>
155	<i>Synedra affinis</i>
156	" <i>biceps</i>
157	" <i>capitata</i>
158	" <i>minutissima</i>
159	" <i>radians</i>
160	" <i>salina</i>
161	<i>Spatangidium Ralfsianum</i>
162	<i>Tabellaria fuculosa</i>
163	" <i>fenestrata</i>
164	<i>Triceratium arcticum</i>
165	" <i>alternans</i>
166	" <i>favus</i>
167	<i>Tryblionella</i>

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221	Hampstead
222	Hull
223	Hunst, Shetland
224	Japan
225	Lea River
226	Monte Video
227	Moron, Seville
228	New River
229	New Zealand
230	Oran, Algeria, Africa
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232	Red Sea
233	Southend
234	Swanscomb, Salt Marsh
235	Suero de Castro
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273 Orchid Erides affine  
274 " " odoratum Pol.  
275 " " Oncidium bicallosum Pol.  
276 " " Harrisonii Pol.  
277 " " Lanceolatum Pol.  
278 " Vanda Speciosa Pol.  
279 " Pleurothallis ruscifolia  
280 Pear Pyrus communis  
281 Pine Abies excelsa  
282 Rhubarb Rheum Rhaoticum  
283 Truffle Tuber æstivum  
284 Water Lily Nuphar lutea  
285 White Lily Liliium candidum

**STARCH.**

- 286 Acorn Quercus Pedunculata  
287 Arrowroot, East Indies, Curcuma  
288 " Bermuda, Maranta arundinaceæ

- 289 Bean Haricot Phareolus  
290 Buckwheat  
291 Chestnut Castanea Vesca  
292 Ginger Zingiber officinalis  
293 Indian Corn Zed mays  
294 Oat Avena sativa  
295 Potato Solanum Tuberosum Pol.  
296 Pea Pisum sativum  
297 Rice Oryza sativa  
298 Sago Cycas revoluta  
299 St. Vincent Arrowroot  
300 Tapioca Jatropha Manihot  
301 Tous le mois Canna edules Pol.  
302 Vetch  
303 Wheat Triticum æstivum  
304 Yam Dioscoria sativa

**SCALARIFORM VESSELS.**

- 305 Fern brake Pteris aquilina  
306 " Asplenium pubescens  
307 " Osmunda Regalis  
308 Prickly Pear Opuntia vulgaris  
309 Moss Selaginella Selanoides  
310 Prickly Pear Opuntia vulgaris

**SPIRAL VESSELS.**

- 311 Balsam Balsamia hortensis  
312 Cactus Echina cactus  
313 Cycas Cycas circinalis  
314 " Opuntia vulgaris  
315 Collomia Collomia grandifolia  
316 " Cobeca scandens  
317 Dog Wood Piscidia Erythrina  
318 Lily leaf, spiral fibre  
319 Leek Allium porrum  
320 Lettuce Lactuca sativa  
321 Moss Jungermannia

**RAPHIDES.**

- 322 Aloe Agave Americana  
323 Cactus Opuntia major  
324 Garlic Allium sativum Pol.  
325 Hyacinth Hyacinthus Pol.  
326 Lime Bark Tilia Europea  
327 Onion Allium Ceba Pol.  
328 Pear Pyrus communis  
329 Rhubarb Rheum Rhaoticum  
330 Squill Urginea maritima

**LEAVES.**

- 331 Deutzia Deutzia scabra  
332 Elæagnus  
333 Fern Adiantum  
334 " Aspidium  
335 " Asplenium  
336 " Cheilanthes  
337 " Davallia  
338 " Osmunda  
339 Fern Isoetes  
340 " Pteris  
341 " Polystichum  
342 " Polypodium  
343 " Scolopendrum  
344 " Woodwardia  
345 " Hippophæ Canadense  
346 India Rubber leaf section  
347 Moss Spagnum  
348 Nettle Urtica dioica  
349 Orchid Oncidium Lanceolatum  
350 " " Harrisonii  
351 " Pleurothallis ruscifolia  
352 Oak with Galls Quercus pedunculata

## POLLENS.

353	Fir	<i>Albies pectinata</i>
354	Hollyhock	<i>Althæa rosea</i>
355	Malope	<i>Malva grandiflora</i>
356	Marsh Mallow	<i>Althæa officinalis</i>
357	Loasa	<i>Loaseæ</i>

## HARD TISSUES.

358	Croton Seed	<i>Croton tiglium</i>
359	Cocoa Nut	<i>Cocas nucifera</i>
360	Coquilla Nut	<i>Attalea funifera</i>
361	Castor Seed	<i>Ricinus communis</i>
362	Date Stone	<i>Phoenix dactylifera</i>
363	Ivory Nut	<i>Phytelephas macrocarpa</i>
364	Peach Stone	<i>Amygdalus persica</i>
365	Star Anise	<i>Illicium anisatum</i>
366	Wood Nut	<i>Corylus Avellana</i>

## CUTICLES.

367	Aloe	<i>Agave Americana</i>	
368	Apple	<i>Pyrus malus</i>	
369	Buckthorn Sea	<i>Hippophæ rhamnoides</i>	
370	Bamboo	<i>Bambusa aurandinaea</i>	Pol.
371	Box	<i>Buxus sempervirens</i>	
372	Common Spike	<i>Rush Scirpus palustris</i>	
373	Correa	<i>Correa alba</i>	
374	Deutzia	<i>Deutzia scabra</i>	Pol.
375	"	" <i>stamenia</i>	Pol.
376	Fern		
377	Flag	<i>Iris</i>	Pol.
378	"	<i>Gasteria ensifolia</i>	Pol.
379	Grass	<i>Festuca glauca</i>	
380	Garlic	<i>Allium sativum</i>	
381	Horse Tail	<i>Casuarina equisetifolia</i>	
382	Indian Corn	<i>Zea Mays</i>	
383	Iris	<i>Iris alata</i>	
384	Ivy	<i>Hedera Helia</i>	
385	Loaseæ	<i>Loaseæ loasa</i>	
386	Malacca Cane	<i>Calamus scipienum</i>	
387	Onosma	<i>Onosma taurica</i>	
388	Orchid	<i>Oncidium bicallosum</i>	
389	"	<i>Pleurothollis ruscifolia</i>	Pol.
390	Onion	<i>Allium cepa</i>	Pol.
391	Oleander	<i>Nerium oleander</i>	
392	Pitcher Plant	<i>Nepenthes ampulacea</i>	
393	"	" <i>Raffelsii</i>	
394	Pea	<i>Pisum sativum</i>	
395	Rice	<i>Oryza sativa</i>	Pol.
396	Rose bay	<i>Nerium oleander</i>	
397	"	<i>Stangeria paradoxa</i>	
398	Talipot Palm	<i>Corypha umbraculifera</i>	Pol.
399	Wheat	<i>Triticum aestivum</i>	Pol.
400	"	<i>Yucca Gloriosa</i>	
401	Wild Olive	<i>Eleagnus hortensis</i>	

## WOOD SECTIONS.

402	Australian Creeper	
403	American Birch	<i>Betula Nigra</i>
404	Ash	<i>Fraxinus excelsia</i>
405	Arbor vitæ	<i>Thuji occidentalis</i>
406	Alder	<i>Alnus glutinosa</i>
407	Apple	<i>Pyrus malus</i>
408	Aspen	<i>Populus tremula</i>
409	Akebia	<i>Akebia quintata</i>
410	Aloe	<i>Agave Americana</i>
411	Badger's bane	<i>Aconitum meloctonum</i>
412	Birthwort	<i>Aristolochia siphio</i>
413	"	" <i>serpentaria</i>
414	"	" <i>ornithocephala</i>
415	"	" <i>Indica</i>
416	Blue gum	

417	Butcher's broom	<i>Ruscus Hypoglossum</i>
418	"	" <i>aculeatus</i>
419	Burdock	<i>Arcticum Sappa</i>
420	Bamboo Cane	<i>Bambusa Aurandinaea</i>
421	Blackthorn	<i>Prunus spinosa</i>
422	Beech	<i>Fagus sylvatica</i>
423	Bull Rush, Jamaica	
424	Birch	<i>Betula alba</i>
425	Box	<i>Buxus sempervirens</i>
426	Balsam	<i>Balsamina hortensis</i>
427	Brake Fern	<i>Pteris aquilina</i>
428	Beet	<i>Beta vulgaris</i>
429	Banyan Tree	<i>Ficus indica</i>
430	Blackberry	<i>Rubus fruticosus</i>
431	Banksia	<i>Banksia grandis</i>
432	"	" <i>oblongifolia</i>
433	"	" <i>speciosa</i>
434	Brinnia chrysophilla	
435	Cactus	<i>Cactus hexagonus</i>
436	Cedar	<i>Larix Cedaris</i>
437	Chocolate	<i>Theobroma Cacao</i>
438	Climber, from Calicut	
439	"	<i>Iale of Negroes, 1</i>
440	"	" <i>2</i>
441	"	" <i>Root</i>
442	Cedar of Lebanon	<i>Abies cedarus</i>
443	Chinese Rice paper plant	
444	Cyperus	<i>Cyperus longus</i>
445	Cherry	<i>Prunus cerasus</i>
446	Cane Root, India	
447	"	<i>Rattan Calamus rudendum</i>
448	Coffee	<i>Coffea Arabica</i>
449	Camphor Wood	<i>Laurus camphora</i>
450	Chestnut	<i>Castanea Vesca</i>
451	Cypress	<i>Cupressus sempervirens</i>
452	Cork	<i>Quercus suber</i>
453	Climber, Demerara	
454	Cycas	<i>Cycas circinalis</i>
455	"	" <i>revoluta</i>
456	"	<i>Cythea elegans</i>
457	"	<i>Casuarina Equisetifolia</i>
458	Cinnamon	<i>Laurus cinnamomum</i>
459	Carrot	<i>Daucus carota</i>
460	Deal	<i>Pinus strobus</i>
461	Dagger Plant	<i>Yucca</i>
462	Damson	<i>Simaruba amara</i>
463	Dandelion	<i>Taraxacum Dens Leonis</i>
464	Date Palm	<i>Phoenix dactylifera</i>
465	Dock	<i>Rumex nemolapathum</i>
466	Dog's Bane	<i>Aconitum Cynoctanum</i>
467	Dog Wood	<i>Piscidia Erythoima</i>
468	Elm	<i>Ulmus campestris</i>
469	Elder	<i>Sambucus Nigra</i>
470	Elephant's Foot	<i>Testudinaria Elephantipes</i>
471	Ebony	<i>Excœcaria glandulosa</i>
472	Fern Flowering	<i>Osmunda regalis</i>
473	"	<i>Angiopteris Teysmaniana</i>
474	Fustic	<i>Maclura tinctoria</i>
475	Fig	<i>Ficus Carica</i>
476	Filbert	<i>Corylus Avellana</i>
477	Furze	<i>Ulex Europæus</i>
478	Grape Vine	<i>Vitis vinifera</i>
479	Gutta Percha	<i>Isonandra Gutta</i>
480	Gourd	<i>Cucubita Pepo</i>
481	Ginger	<i>Zingiber officinale</i>
482	Horse Tail	<i>Equisetum hymele</i>
483	Hickory	<i>Carya alba</i>
484	Huon Pine	<i>Dacrydium Franklinii</i>
485	Hornbeam	<i>Carpinus Betulus</i>
486	Horse Chestnut	<i>Æsculus Hippocastanum</i>
487	Holly	<i>Ilex aquifolium</i>
488	Hollyhock	<i>Althæa rosea</i>

3	Hazel	<i>Corylus avellana</i>
0	Hawthorn	<i>Crataegus Oxyacantha</i>
1	Hemlock	<i>Conium maculatum</i>
2	Ivy	<i>Hedera Helix</i>
3	Jasmin	<i>Jasminum officinale</i>
4	Kawrie	<i>Dammara Australis</i>
5	Larch	<i>Abies Larix</i>
3	Laburnum	<i>Cytisus Laburnum</i>
7	Lancewood	<i>Guatteria virgata</i>
3	Lime	<i>Tilia Europæ</i>
9	Lace Bark	<i>Lagetta lintearia</i>
0	Laurel	<i>Cerasus Laurocerosus</i>
1	Logwood	<i>Strychnos ligustrina</i>
2	Lilac	<i>Syringa vulgaris</i>
1	Mahogany, Australia	
1	"	<i>Honduras Swietenia Mahagoni</i>
5	"	Spanish " "
7	"	Root " "
7	Malacca Cane	<i>Calamus scipionum</i>
3	Maple	<i>Acer campestre</i>
0	Mulberry	<i>Morus Nigra</i>
		<i>Marattia alata</i>
		<i>Monstera deliciosa</i>
		<i>Musa dacca</i>
	Mistletoe	<i>Viscum Album</i>
	Mountain Ebony	<i>Bauhinia Chiniensis</i>
	Monkey Puzzle	<i>Araucaria imbricata</i>
	Norfolk Island Pine	" excelsa
	Oak, African	<i>Oldfieldia Africana</i>
	"	American <i>Quercus alba</i>
	"	English " <i>Pedunculata</i>
	Passion Flower	<i>Passiflora</i>
	Papaw Tree	<i>Carica Papaya</i>
	Partridge Wood	<i>Histeria coccinea</i>
	Plane Tree	<i>Platanus orientalis</i>
	Poplar	<i>Populus dilatata</i>
	Pepper	<i>Piper amplexa</i>
	"	" <i>Betle</i>
	"	" <i>nigrum</i>
	"	" <i>excelsa</i>
	"	" <i>Artanthe elongata</i>
	Peony	<i>Penia officinalis</i>
	Pareira brava	<i>Cissampelos pareira</i>
	Pear	<i>Pyrus communis</i>
	Potato	<i>Solanum tuberosum</i>
	Palm Dragon	<i>Dracæna Draeo</i>
	"	Root <i>Dracæna Draco</i>
	"	Tagua <i>Palma Tagua</i>
	"	Talipot <i>Corypha umbraculifera</i>
	"	Date <i>Phoenix dactylifera</i>
	"	Sago <i>Sagus Rumphii</i>
	"	Wine <i>Caryota urens</i>
	"	Betel <i>Areca Catechu</i>
	"	Cabbage " <i>oleracea</i>
	"	Cocoa Nut <i>Cocos nucifera</i>
*	"	Root " "
	"	Fan <i>Corypha</i>
	"	European <i>Chamaerops humilis</i>
	"	Indian " <i>excelsa</i>
	"	<i>Plectonia elongata</i>
	"	<i>Strelitzia Regina</i>
	Pine Apple	<i>Ananassa sativa</i>
	Prickly Pear	<i>Opuntia vulgaris</i>
	"	" <i>major</i>
	Rhubarb, English	<i>Rheum Rhaponticum</i>
	"	Turkey " <i>palmatum</i>
	Rosewood	<i>Dalbergia nigra</i>
	Rush Bull	<i>Scirpus lacustris</i>
	"	Sea <i>Juncus Maritimus</i>
	"	Common " <i>communis</i>
	"	Jungle

560	Rush, India	
561	Sallow	<i>Salix Caprea</i>
562	Sarsaparilla Italian	<i>Smilax aspera</i>
563	"	" <i>siphilitica</i>
564	"	" <i>officinalis</i>
565	Satinwood	<i>Chlorexylon Swietenia</i>
566	Screw Pine	<i>Pandanus odoratissimus</i>
567	Strawberry Tree	<i>Arbutus Unedo</i>
568	Sugar Cane	<i>Saccharum officinarum</i>
569	Sunflower	<i>Helianthus Annus</i>
570	Supple Jack	<i>Paullinia polyphylla</i>
571	Sycamore	<i>Acer Pseudo Platanus</i>
572	Teak	<i>Tectona grandis</i>
573	Traveller's Joy	<i>Clematus vitalba</i>
574	Truffle	<i>Tuber astivum</i>
575	Trumpet Flower	<i>Bignonia capriolata</i>
576	"	<i>Bignonia radicans</i>
577	Upas Tree	<i>Antiaris toxicaria</i>
578	Walnut	<i>Juglans regia</i>
579	Water Lily	<i>Nuphar lutea</i>
580	"	Petiole " "
581	Wax Plant	<i>Hoya imperialis</i>
582	Willow	<i>Salix alba</i>
583		
584	Yam	<i>Dioscorea Batatas</i>
585	Yew	<i>Taxus Baccata</i>
586		<i>Zamia Tridenta</i>
587	Zebra Wood	<i>Omphalobium Samberti</i>

## INDIAN WOOD SECTIONS—NATIVE NAMES.

588	Agotee
589	Amsee
590	Angonee
591	Bamooree
592	Baeseer Noonee
593	Ben Koo
594	Coochle Malee
595	" Lutta
596	Gorokachol
597	Gooeree Malee
598	Ghotee Lutta
599	Goorkoom
600	Gonokyree
601	Jamneenee Lutt
602	Korkamee
603	Luteo
604	Mogabee
605	Moorabee
606	Mukhta
607	Madhut Lutt
608	Oke Lutta
609	Pachee Lutt
610	Patoo
611	Pateree
612	Soura Lutta
613	Zeapootee

## SEEDS.

614	<i>Amarantha tricolor</i>
615	<i>Antirrhinum Majus</i>
616	<i>Alyssum olympticum</i>
617	<i>Bignonia radicans</i>
618	<i>Cobaea scandens</i>
619	Corn Cockle
620	<i>Calempelis scabra</i>
621	<i>Calceolaria pinnata</i>
622	<i>Calliopsis tinctoria</i>
623	<i>Campanuli</i>
624	" <i>pyramidalis alba</i> Op.
625	<i>Cistus</i>
626	" <i>albidus</i>

627	Croton Tester	Croton tiglium
628	Castor "	Ricinus communis
629		Digitalis ferruginea
630		Digitalis purpurea alba
631		Eccremocarpus scaber
632		Erica baccans
633		" pirria
634		Entoca viscida
635		Gypsophila elegans
636		Grammanthes gentianoides
637		Gerardia Communis
638		Gentiana Septemfida
639		Glaucium Luteum

## Grass

641		Hyoscyamus pictus
642		Hypericum barbatum
643		Ipomopsis picta
644		Incarvillia siensis
645		Lophospermum erubescens
646		Lophospermum scandens
647		Lichnia flos Jovis
648		" Alba
649		" Viscaria
650		Loasa aurantica
651		Myosotis palustres alba
652		Nicotina glauca

## Orchid from Brazil

654	"	Orchid pyramidalas
655	"	Orphys menachis
656	"	Cymbidium snæva
657	"	Epidendron Schomburghii
658	"	Essequiboo "
659	"	" "
660	"	Leperis orziperis
661	"	Parnassia palustres
662	"	Scrapias grandifolia
663	"	" latifolia
664	"	Paulowina imperialis
665	"	Portulica
666	"	Petunia Phœnicea
667	"	Phlox Drummondii
668	"	Papaver somniferum

## Poppy, East India

669		Silene alpestris
670		" Armeria rubra
671		" Maritima
672		Sedum reptans
673		Salpiglossus splendidi
674		Sphenogyne speciosa
675		Spergula pilifera
676		Sanvitalia procumbens
677		Spergularia
678		Tecoma stans
679		Vascaria ventata

## PETALS.

681	Petal of Deutzia	Deutzia Scabra
682	"	Geranium
683	"	Pansy
684	"	Corroea Corroea speciosa

## EGGS OF BUTTERFLIES, 1s. and 1s. 6d.

## each.

## LEPIDOPTERA.

685	Alderman	Vanessa Atalanta
686	Brown Hair Streak	Thecla Betulae
687	Clouded Yellow	Colias
688	Common Copper	Chrysophanus Phlaeas
689	"	Blue Polyommatus Alexis
690	Chalk Hill	" Corydon

691	Lead Blue	Polyommatus Ægon
692	Large Heath	Hipparchia Tithonus
693	" White	Pontia Brassicae
694	Meadow Brown	Hipparchia Janira
695	Ringlet	" Hyperanthus
696	Speckled Wood	Liasiommatas Ægeria
697	Small White	Pontia Rapae
698	" Heath	Cenonympha Pamphilus
699	Tortoiseshell	Vanessa Urticae

## EGGS OF MOTHS, 1s. and 1s. 6d. each.

## LEPIDOPTERA.

700	Angle Shades.	Phlogophora metriculosa
701	Brindle Beauty	Biston hirtaria
702	Brown Tail	Porthesia Chrysorrhæa
703	Buff Tip	Pygæa Bucephala
704	" Tiger	Euthemonia Russula
705	Canary Shouldered Thorn	Ennomos Tiliaria
706	Common Footman	Lithosia complanula
707	Coxcomb Prominent	Lophopteryx camelina
708	Chimney Sweeper	Minoa Chærophyllata
709	Cabbage	Mamestra brassica
710	Drinker	Odonestris potatoria
711	Dark Arches	Xylophasia polyodon
712	Emerald volute	Iodis verænria
713	Gipsy	Hypogymna dispar
714	Kentish Glory	Endromis versicolora
715	Lunar Thorn	Selenia lunaria
716	Meal Moth	Pyralis farinalis
717	Magpie	Abraxas grossulariata
718	Mottled Umbre	Boarmia repandata
719	Noctua	Noctua Bella
720	Oak Egger	Lasiocampa Quercus
721	" Bar	
722	Puss	Cerura vinula
723	Privet	Sphinx Ligustri
724	Purple Thorn	Selenia illustraria
725	Pebble Hook Tip	Drepana falcatoria
726	Ribband Wave	Acidalia aversata
727	Straw Belle	Aspilatus gilvaria
728	Silkworm	Bombyx Mori
729	Scollop'd Oak	Crocallis elinguaris
730	Silverlines	Chloephora prasinana
731	Scarlet Tiger	Hyper, Dominula
732	Swallow Prominent	Leocampa dictæa
733	" Tail	Ouræpteryx sambucaria
734	Silver Ground carpet	Melanippe montanata
735	September Thorn	Ennomos erosaria
736	Silver Y	Plusia gamma
737	Shark	Cucullia umbratica
738	The Chevalier	Euplexia lucipara
739	The Belle	Aspilates citraria
740	Triangular Spot	Noctua Triangulum
741	Tawney X	Apamea Testacea
742	Vapourer	Orgyia antiqua
743	Waved Umbre	Hemerophila abruptaria
744	Willow Beauty	Boarmia rhomboidaria
745	White Wave	Cabera pusaria
745a	Yellow Shell	Camptogramma bilineata

# OF PARASITES, 1s. and 1s. 6d. each.

Australian Crane  
African Jackal  
Black Francolin  
Black Backed Kalegee  
Bohemian Pheasant  
Bustard  
Burrowing Owl  
Common Rhea  
Crown Crane  
Capuchin Monkey  
Cornish Chough  
Common Buzzard  
Dog  
Ground Hornbill, No. 1  
" " No. 2  
Gibbon Monkey  
Golden-Eyed Duck  
Gray Crow Shrike  
Goliath Heron  
Indian Francolin  
Jaggar Falcon  
Man  
Mexican Deer  
Mallee Bird  
Pig  
Pileated Vulture  
Pavo Nigripennis  
Sommerings Pheasant  
Secretary Vulture  
Shawl Goat  
Sandwich Island Goose  
Stanley Crane  
Temmincks Tragopan  
Vicillots Pheasant  
White Crested Kalegee  
" Tiger Bittern  
Bed Bug Acanthia lectularia  
Earth Mite  
Fat Fly Anthomyia lardaria  
Sedge Fly Siales saturalis

## LARVA, 1s. and 1s. 6d. each.

### APHANIPTERA.

Flea Pulex irritans

### COLEOPTERA.

Wire Worm Elater segetum  
Water Beetles Acilius  
" Colymbetes  
" Dytiscus marginalis  
" Hydrophilus

### DIPTERA.

Blow Fly Musca vomitoria  
Crane " Tipula oleracea  
Fat " Anthomyia lardaria  
Gnat " Culex pipens  
Horse Bot Aëstrus equi

### LEPIDOPTERA.

Alderman But-  
terfly Vanessa Atalanta  
Peacock " Io  
Tortoiseshell " Urticæ  
White " Pieris brassicæ  
Brindle Beauty  
Moth Biston hirtaria

803 Magpie Abraxas grossulariata  
804 Silkworm Bombyx mori  
805 Vapourer Orgyia antiqua

## PUPA, 1s. and 1s. 6d. each.

### COLEOPTERA.

806 Rove Beetle Staphylinus  
807 Lady Bird Coccinella  
808 Tortoise Beetle Cassida

### LEPIDOPTERA.

809 Butterfly Tortoiseshell Vanessa Urticæ  
810 " White Pieris Brassicæ  
811 Moth Brindle Beauty Biston Hirtaria

### EXUVIA.

812 Myriapod  
813 Tortoise Beetle Cassida  
814 Bed Bug Acanthia lectularia  
815 Aphides  
816 Dragon Fly Larva Libellula

## WHOLE INSECTS, 1s. 6d. each.

### COLEOPTERA.

817 Click Beetle  
818 Cardinal " Pyrochrea rubens  
819 Devil's Coach Horse, Ocypus olens  
820 Flower Beetle Demetrias atricapellus  
821 " Lagria hirta  
822 Glow Worm, Male Lampyris noctulica  
823 " Female " "  
824 Hedge Beetle Dromius agilis  
825 Lady Bird Coccinella, 22 punctata  
826 " " 2 punctata  
827 " " 7 punctata  
828 " " dispar  
829 Museum Beetle Anthrenus  
830 Rove Beetle Staphylinus  
831 Sun Shiner Carabus  
832 Soldier Beetle Telephorus rufus  
833 " " melanurus  
834 " " lividus  
835 " " lituratus  
836 Snout Beetle Ciouis blattaria  
837 " " Scophularia  
838 " " Thapsus  
839 " " Verbasi  
840 Tortoise Cassida viridis  
841 Tiger Cicindela campestris  
842 Weevil Nut Balaninus nucum  
843 " Apion violaceum  
844 " " fagi  
845 " " hæmatodes  
846 " Eustalis Thunbregii  
847 " Enticus auricinctus  
848 " Hypera nigrostris  
849 " Otiorhynchus Op.  
850 " Phyllobius argentatus Op.  
851 " " alneti Op.  
852 " " pomonæ Op.  
853 " " pyri  
854 " " undulata Op.  
855 " Sitona lineatus Op.  
856 " Strophosomus coryli Op.  
857 Water Beetle Acilius  
858 " Colymbetes  
859 " Gyrinus natator  
860 " Hydroporus



## HEMIPTERA.

861	Bug, Bed	
862	Bug, Field	
863	Bug, Water	<i>Naucoris cimicoides</i>
864	Boat Fly	<i>Notonecta glauca</i>
865	Cuckoo Spitfly	<i>Aphrophera spumaria</i>
866	Leaf Insect	<i>Chelomorpha phyllophora</i>
867	Small Boatman	<i>Corixa Geoffroyi</i>
868	"	<i>Cymatia Bersdorffi</i>
869	Tingis	<i>Tingis foliacea</i>
870	"	" <i>cassicornis</i>
871	"	" <i>cardui</i>
872	Water Measurer	<i>Hydrometra gibbifera</i>
873	" Scorpion	<i>Nepa cinerea</i>

## LEPIDOPTERA.

874	Silver Spot Moth	<i>Chrysoclista Linneiella</i>
875	Small "	<i>Cemiostoma Laburnella</i>

## NEUROPTERA.

876	Dragon Fly	<i>Libellula</i>
877	Scorpion	<i>Panorpa communis</i>

## DIPTERA.

878	Blotch Wing Fly	<i>Dilophus spinatus</i>
879	Blow Fly	<i>Musca vomitoria</i>
880	Bee "	<i>Volucella pellucens</i>
881	Crane "	<i>Tipula oleracea</i>
882	"	" <i>gigantea</i>
883	Drone "	<i>Eristalis tenax</i>
884	Dancer "	<i>Hilara maura</i>
885	Dung "	<i>Scatophagus</i>
886	Darting "	<i>Syrphus</i>
887	Flesh "	<i>Sarcophaga carnaria</i>
888	Fat "	<i>Anthomyia lardaria</i>
889	Fantail "	<i>Dolichopus brevipes</i>
890	" "	" <i>simplex</i>
891	" "	" <i>tenius</i>
892	Gnat, Male	<i>Culex pipiens</i>
893	" Female	"

## HYMENOPTERA.

894	Ant	<i>Formica fusca</i>
895	Corn Saw Fly	<i>Cephus pygmaeus</i>
896	Gall	<i>Cynips</i>
897	Hive, Bee	<i>Apis mellifica</i>
898	Ichneumon	<i>Ophion luteum</i>
899	Ruby Tail	<i>Chrysis bidentata</i>
900	" "	" <i>luteum</i>
901	Saw Fly	<i>Tenthredo cincta</i>
902	"	" <i>arcuatus</i>
903	"	" <i>hamatopus</i>
904	"	" <i>viridis</i>
905	"	" <i>scalaris</i>
906	" Turnip	
907	Wasp	<i>Vespa vulgaris</i>
908	Gad Fly	<i>Hæmatopa pluvialis</i>
909	"	<i>Chrysops cacutiens</i>
910	Garden "	<i>Bibio hortulanus</i>
911	" "	" <i>pomona</i>
912	" "	" <i>marci</i>
913	Hoverer "	<i>Rhlingia rostrata</i>
914	" "	<i>Syrphus ornata</i>
915	" "	" <i>ribessi</i>
916	House "	<i>Musca domestica</i>
917	" "	<i>Anthomyia pluvialis</i>
918	Marsh "	<i>Tetanocera reticulata</i>
919	" "	" <i>ferruginea</i>
920	Sedge "	<i>Sialis suturalis</i>
921	" "	

922	Sheep Tick Fly	<i>Melophagus ovinus</i>
923	Stinging "	<i>Stomoxys calcitrans</i>
924	Sewer "	<i>Platystoma semina</i>
925	Snipe "	<i>Empis livida</i>
926	" "	" <i>tessellata</i>
927	" "	" <i>lutea</i>
928	Sheepshead "	<i>Asilus calceatus</i>
929	Tiger "	<i>Leptis scolopacea</i>
930	Tabinus "	
931	Wasp "	<i>Conops aculeata</i>
932	" "	" <i>ceriaformis</i>

## ARACHNIDA.

933	Bush Spider	<i>Agelena nava</i>
934	Crab "	<i>Thomisus</i>
935	Cellar "	<i>Tigenaria domestica</i>
936	Garden "	<i>Epeira diadema</i>
937	Ground "	<i>Lycosa agretyra</i>
938	House "	<i>Agelena labyrinthica</i>
939	Harvest "	<i>Phalangium cornuti</i>
940	Jumping "	<i>Salticus senicus</i>
941	Long-Legged Tree Spider	<i>Pholens phalangioides</i>
942	Long-Legged Grass Spider	<i>Tetragnatha extensa</i>
943	Marsh "	<i>Lycosa piratica</i>
944	Water "	<i>Argyroneta aquatica</i>
945	Centipede "	<i>Sethobus forcipatus</i>
946	Millipede "	
947	Scorpion "	<i>Chelifer Wideni</i>

## PARASITES, 1s. 6d. each.

948	Australian Crane	
949	Black Francolin	
950	" Baked Kalegee	
951	Bohemian Pheasant	
952	Beetle	<i>Acarus coleoptratus</i>
953	Capuchin Monkey	
954	Canary	
955	Crowned Crane	
956	Common Rhea	
957	" Bittern	
958	" Curlew	
959	Dog	
960	Darmar	
961	Eagle, from Japan	
962	Francolin "	
963	Fowl, from Menopon	
964	Goat	
965	Golden Eagle	
966	" Eyed Duck	
967	Ground Hornbill	
968	" Squirrel	
969	Greenland Seal	
970	Goliath Heron	
971	Jackall, North America	
972	Jagger Falcon	
973	Java Pea Fowl	
974	Japan Pheasant	
975	Lineated Buzzard	
976	Lobster	
977	Lannar Falcon	
978	Marsh Harrier	
979	Macqueens Bustard	
980	Mexican Deer	
981	Man	<i>Pediculus vestimenti</i>
982	"	<i>Pthirus inguinalis</i>
983	Peacock	
984	Pig	<i>Hæmatopinus suis</i>
985	Peregrin Falcon	

Piliated Vulture  
 Reeves Pheasant  
 Rook Docophorus  
 Stickleback Argulus Foliacius  
 Sheep  
 Sooty Monkey  
 Snowy Owl  
 Shawl Goat  
 Secretary Vulture  
 Spotted-eared Owl  
 Sommerings Pheasant  
 Sole  
 Tortoise  
 Thick-billed Night Heron  
 Triangular Spotted Pigeon  
 Temmincks Tragopan  
 White Goshawk  
 Whistling Eagle  
 White-headed Sea Eagle  
 White-crested Tiger Bittern

## HEADS, 1s. and 1s. 6d. each.

## COLEOPTERA.

Cardinal Beetle Pyrochroa rubens  
 Click " Staphylinus  
 Rove " Carabus  
 Sun Shiner " Cicindela campestris  
 Tiger " Acilius  
 Water " Gyrinus natator  
 " " Larva Dytiscus margi-  
 " " nalis  
 Weevil Curculio splendens  
 " Cyphus Germari  
 " " gibber  
 " Eupholus Schonherrii  
 " Hypomeces squamosus  
 " Platymus alticollis  
 " Phyllobius argentatus  
 " " pomonæ  
 " " pyri

## DIPTERA.

Blow Fly Musca vomitoria  
 Bee " Volucella pellucens  
 Crane " Tipula oleracea  
 Dung " Scatophagus  
 Drone " Eristalis Tenax  
 Darting " Syrphus  
 Fat " Anthomyia lardaria  
 Fantail " Dolichopus  
 Gad " Hæmatopa pluvialis  
 Gnat, Male Culex pipiens  
 " Female " "  
 Garden Fly Bibio hortulanus  
 House " Mussa domestica  
 Hornet " Asilus crabroniformis  
 Rhingia rostrata  
 Horse Bot Estrus equi  
 Snipe Fly Empis livida  
 Stinging " Stomoxys calcitrans  
 Sheep Tick Melophagus ovinus  
 Tiger Fly Leptis scolopacea  
 Wasp Fly Conops aculeata

## HEMIPTERA.

Boat Fly Notonecta glauca  
 Bed Bug  
 Bug, Field  
 Cuckoo Spit Fly Aphrophora spumaria  
 Water Measurer Hydrometra gibbifera  
 " Scorpion Nepa cinerea

## HYMENOPTERA.

1050 Bee, Honey Apis mellifica  
 1051 " Wild Bombus  
 1052 Corn Saw Fly Cephus pygmaeus  
 1053 Gall Fly Cynips  
 1054 Hornet Vespa crabro  
 1055 Ichneumon Fly Ophion luteum  
 1056 Wasp Vespa vulgaris  
 1057 Saw Fly Tenthredo

## LEPIDOPTERA.

1058 Apollo Butterfly Papilio Apollo  
 1059 Alderman " Vanessa Atalanta  
 1060 Peacock " " Io  
 1061 " " larva " " Urticæ  
 1062 Tortoiseshell " " Urticæ  
 1063 " larva " "  
 1064 White Pieris brassicæ  
 1065 Brindle Beauty. Biston hirtaria  
 Moth  
 1067 Forester Noctua  
 1068 Noctua Bombyx Mori  
 1069 Silkworm  
 1070 " larva " "  
 1071 Vapourer Orgyia antiqua

## NEUROPTERA.

1072 Dragon Fly Libellula  
 larva  
 1073 Scorpion " Panorpa communis

## ORTHOPTERA.

1074 Cricket Acheta domestica  
 1075 Grass Hopper Gryllus campestris

## DERMAPTERA.

1076 Earwig Forficula auricularia  
 1077 House Beetle Blatta

## ANTENNÆ, 1s. and 1s. 6d. each.

1078 Cockchafer, Male Melolontha vulgaris  
 " Female  
 1079 Water Beetle Gyrinus natator  
 1080 Dytiscus marginalis  
 1081 Cyphus Germari  
 1082 Weevil " gibba  
 1083 Eupholus Schonherrii  
 1084 Hypomeces squamosus  
 1085 Hypera nigrorostris  
 1086

## LEPIDOPTERA.

1087 Alderman But-terfly Vanessa Atalanta  
 1088 Peacock " Io  
 1089 Tortoiseshell " Urticæ  
 1090 White Pieris brassicæ  
 1091 Brindle Beauty Biston hirtaria  
 Moth  
 1092 Drinker  
 1093 Emperor  
 1094 Vapourer Orgyia antiqua

## HYMENOPTERA.

1095 Bee, Hive Apis mellifica  
 1096 " Wild  
 1097 Saw Fly Tenthredo  
 1098 Wasp Vespa vulgaris

## DIPTERA.

1099	Blow Fly	Musca vomitoria
1100	Bee "	
1101	Chameleon Fly	
1102	Crane "	Tipula oleracea
1103	Drone "	Eristalis tenax
1104	Fan Tail "	Dolichopus
1105	Fat "	Anthomyia lardaria
1106	Gad "	Hæmatopa pluvialis
1107	Gnat, Male	Culex pipiens
1108	" Female	
1109	House Fly	Musca domestica
1110	Marsh "	Tetanocera
1111	Wasp "	Conops

## EYES, 1s. 6d. each.

## COLEOPTERA.

1112	Cockchafer	Melolontha vulgaris
1113	Water Beetle	Dytiscus marginalis

## HEMIPTERA.

1114	Cimex, from China, to show the image	
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## LEPIDOPTERA.

1115	Alderman But- terfly	Vanessa Atalanta
1116	Peacock "	" Io
1117	Tortoiseshell "	" Urtica
1118	White "	Pieris brassicae
1119	Brindle Beauty Moth	Biston hirtaria

## HYMENOPTERA.

1120	Bee, Hive	Apis mellifica
1121	Wasp	Vespa vulgaris

## DIPTERA.

1122	Blow Fly	Musca vomitoria
1123	Crane "	Tipula oleracea
1124	Drone "	Eristalis tenax
1125	Fat "	Anthomyia lardaria
1126	Gad "	Hæmatopa pluvialis
1127	Hornet "	Asilis
1128	Hoverer "	Rhingia rostrata
1129	Tabanus	
1130	Sheep-head	Asilus calceatus

## TONGUES, 1s. and 1s. 6d. each.

## LEPIDOPTERA.

1131	Alderman But- terfly	Vanessa Atalanta
1132	Peacock "	" Io
1133	Tortoiseshell "	" Urtica
1134	White "	Pieris brassicae
1135	South American	
1136	Brindle Beauty Moth	Biston hirtaria
1137	Sphinx "	

## HYMENOPTERA.

1138	Bee, Hive	Apis mellifica
1139	" Wild	Bombus
1140	" Sand	
1141	" Mason	Andrena longipes
1142	Brown or Wood Ant	Formica fusca

1143	Corn Saw Fly	Cephus pygmaeus
1144	Hornet	
1145	Saw Fly	Tenthredo
1146	Wasp	Vespa vulgaris
1147	" Sand	

## DIPTERA.

1148	Blow Fly	Musca vomitoria
1149	Bee "	
1150	Crane "	Tipula oleracea
1151	Chameleon Fly	
1152	Drone "	Eristalis tenax
1153	Darting "	Syrphus
1154	Fat "	Anthomyia lardaria
1155	Garden "	Bibio hortulanus
1156	Gad "	Hæmatopa
1157	House "	Musca domestica
1158	" "	Anthomyia pluvialis
1159	Hoverer "	Rhingia rostrata
1160	Marsh "	Tetanocera
1161	Stinging "	Stomoxys calcitrans
1162	Snipe "	Empis lutea
1163	" "	" livida
1164	Wasp "	Conops

## ORTHOPTERA.

1165	Cricket	Acheta domestica
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## ARACHNIDA.

1166	Garden Spider	Epeira diadema
1167	Water "	Argyroneta aquatica

## LANCETS, 1s. 6d. each.

## DIPTERA.

1168	Gnat	Culex pipiens
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## APHANIPTERA.

1169	Flea	Pulex irritans
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## THORAX, 1s. and 1s. 6d. each.

## COLEOPTERA.

1170	Tiger Beetle	Cicindela campestris
1171	Weevils	Cureulio splendens
1172	"	Cyphus Germari
1173	"	" gibber
1174	"	" nigropunctata
1175	"	Eupholus Schonherrii
1176	"	Hypomeces squamosus
1177	"	Hypera nigrirostris
1178	"	Lordops Gyllenhalii
1179	"	Platymus caesus
1180	"	Phyllobus argentatus
1181	"	" pyri
1182	"	Prepodes spectabiles
1183	"	Hoplia cerulea

## ELYTRON, 1s. and 1s. 6d. each.

## COLEOPTERA.

1184	Beetles	Buprestes
1185	"	" ignita
1186	"	Cassida
1187	"	Euchlora viridis
1188	"	Hoplia cerulea
1189	Spanish Fly	Cantharis vesicatoria
1190	Tiger Beetle	Cicindela campestris
1191	"	"

Water Beetle	<i>Dytiscus marginales</i>
"	<i>Gyrinus notator</i>
"	<i>Patobrus</i>
Weevils	<i>Calomorpha Whalbergii</i>
"	<i>Comptus saturalis</i>
"	<i>Curculio splendens</i>
Weevil	<i>Cyphus gibba</i>
"	" <i>nigropunctata</i>
"	" <i>germari</i>
"	" <i>gloriana</i>
"	<i>Chrysolophus spectabiles</i>
"	<i>Eupholus Schonherrii</i>
"	<i>Enticus auricinctus</i>
"	<i>Elaphrus violacea</i>
"	<i>Eustales Thunbergii</i>
"	" <i>adamantines</i>
"	<i>Hypomeces squamosus</i>
"	<i>Hypera nigrostris</i>
"	<i>Lordops Gyllenhalli</i>
"	<i>Pachyrhynchus pantherina</i>
"	" <i>orbifer</i>
"	" <i>gemmatus</i>
"	<i>Platyomus alticolis</i>
"	" <i>argyrens</i>
"	" <i>gemmatus</i>
"	<i>Phyllobius argentatus</i>
"	" <i>pomonæ</i>
"	" <i>pyri</i>
"	<i>Prepodes spectabiles</i>
"	" <i>vittata</i>
"	" <i>glancus</i>
"	<i>Sternotomis bifaciata</i>
"	from China
"	Costa Rica
"	Japan
"	New Zealand
"	Phillipine Isles
"	South America

## WINGS, 1s. each.

## HEMIPTERA.

Cuckoo Spit	<i>Aphrophora spumaria</i>
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## LEPIDOPTERA.

Butterfly, Apollo	<i>Papilio Apollo</i>
"	" <i>Paris</i>
"	" <i>Ulysses</i>
"	" <i>Polyctor</i>
"	" <i>Pompeus</i>
"	<i>Paphia Nessus</i>
"	<i>Morpho Menelaus</i>
"	" <i>Adonis</i>
"	" <i>Cypres</i>
"	" <i>Anexbia</i>
"	" <i>Dacis</i>
"	<i>Ornithoptera Cressus</i>
"	" <i>Richmondi</i>
"	<i>Amblypodia amytes</i>
"	<i>Erycina Julia</i>
" Alderman	<i>Vanessa Atalanta</i>
" Embryo	"
" Peacock	" <i>Io</i>
" Embryo	"
" Tortoiseshell	" <i>Urticæ</i>
" Embryo	"
" Blue	<i>Polyommatus Adonis</i>
"	<i>Catogramma Clymena</i>
" from Australia	"
" White	<i>Pieris brassicæ</i>
" Embryo	"

1257	Butterfly from Central Africa
1258	" " America

## HYMENOPTERA.

1259	Bee, Hive	<i>Apis mellifica</i>
1260	" Wild	<i>Bombus</i>
1261	" Sand	"
1262	Hornet	<i>Vespa crabro</i>
1263	Saw Fly	<i>Tenthredo</i>
1264	Wasp	<i>Vespa vulgaris</i>

## NEUROPTERA.

1265	Dragon Fly	<i>Libellula</i>
1266	" China	"
1267	" South America	"
1268	Lace Fly	<i>Hemerobus perla</i>
1269	Scorpion	<i>Panorpa communis</i>

## LEPIDOPTERA.

1270	Moth, Atlas	"
1271	"	<i>Cylosia aliaris</i>
1272	" Button	<i>Peronea</i>
1273	" Buff Tip	<i>Pygæra bucephala</i>
1274	" Burnet	<i>Anthocera filipendula</i>
1275	" Brindle	"
	" Beauty	<i>Biston hirtaria</i>
1276	" Embryo	"
1277	" Emperor	<i>Saturnia pavonia-minor</i>
1278	"	<i>Erasma pulchella</i>
1279	" Forester	"
1280	" Plume	<i>Pterophorus pentadactylus</i>
1281	" Scarlet	"
	" Tiger	<i>Hypercampa dominula</i>
1282	" Silkworm	<i>Bombyx Mori</i>
1283	" Embryo	"
1284	" Silver Spot	"
1285	" Y	<i>Plusia gamma</i>
1286	"	<i>Sangala gloriosa</i>
1287	"	<i>Urania Sloanus</i>
1288	" Wood Leopard	"

## DIPTERA.

1289	Blow Fly	<i>Musca vomitoria</i>
1290	Crane "	<i>Tipula oleracea</i>
1291	Drone "	<i>Eristalis tenax</i>
1292	Fat "	<i>Anthomyia lardaria</i>
1293	Gad "	<i>Hæmatopa pluvialis</i>
1294	Gnat	<i>Culex pipiens</i>
1295	House Fly	<i>Musca domestica</i>

## ORTHOPTERA.

1296	Cricket	<i>Acheta domestica</i>
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## DERMAPTERA.

1297	Earwig	<i>Forficula auricularia</i>
1298	House Beetle	"

## POISERS, 1s. and 1s. 6d. each.

## DIPTERA.

1299	Blow Fly	<i>Musca vomitoria</i>
1300	Bee	<i>Volucella</i>
1301	Crane Fly	<i>Tipula oleracea</i>
1302	Drone "	<i>Eristalis tenax</i>
1303	Fat "	<i>Anthomyia lardaria</i>
1304	Gad "	<i>Hæmatopa pluvialis</i>

## SOALES.

## COLEOPTERA.

1305	Diamond Beetle	<i>Curculio splendens</i>
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## LEPIDOPTERA.

1306	Butterfly, Alderman	Vanessa atalanta
1307	"	Ameathusi Horsefieldii
1308	"	Blue Polymmatas Egon
1309	"	Azure Argiolus
1310	"	Common Alexis
1311	"	Corydon
1312	"	Iphia glaucippe
1313	"	Meadow
	"	Brown Hipparchia janira
1314	"	Morpho Menelaus
1315	"	Orange Tip, Anthocaris cardamines
1316	"	Peacock Vanessa Io
1317	"	Paris Papilio Paris
1318	"	Tortoise-shell Vanessa Urtica
1319	"	White Pieris albina
1320	"	" ausia
1321	"	" agathina
1322	"	" large brassicae
1323	"	" descombesii
1324	"	" eucharis
1325	"	green veined napi
1326	"	" pyrrha
1327	"	white small rapae
1328	Moth	Atlas
1329	"	Buff Tip Pygæra bucephala
1330	"	Forester
1331	"	Humming Bird
1332	"	Owl Noctua Strix
1333	"	Oak Egger Laciocampa quercus
1334	"	Privet Hawn Sphinx ligustri

## THYSANAUURA.

1335		Petrobius maritima
1336	Sugar-Lepisma	Lepisma saccharina
1337	Springtail	Podura
1338	"	" plumbea
1339	"	" fusca
1340	"	Tomocerus longicornis

## HAIRS, 1s. and 1s. 6d. each.

## COLEOPTERA.

1341	Bacon Beetle Larva	Dermostes lardaria
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## ARACHNIDA.

1342	Spider Garden	Epeira diadema
1343	" Hunting	
1344	" House	Agelena labyrinthica
1345	" Water	Argyroneta aquatica
1346	" Bird Catching	Mygale

## LEPIDOPTERA.

1347	Tiger Moth Larva	
1348	Vapourer Moth Larva	Orgyia antiqua
1349	South Australia	
1350	South American	

## HYMENOPTERA.

1351	Bee	Bombus
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## MYRIAPODA.

1352	Pencil Tail	Polycinus lagurus
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## FEET and LEGS, 1s. and 1s. 6d. each.

## COLEOPTERA.

1353	Beetles	Euchlora
1354	"	Hoplia Cærulea
1355	"	Cassida

1356	Spanish Fly	Cantharides
1357	Soldier Beetle	Telephorus lividus
1358	Tiger Beetle	Cicindela campestris
1359	Water Beetle	Dytiscus marginalis
1360	"	Acilius
1361	"	Gyrinus natator
1362	"	Colymbetes
1363	Weevil	Curculio splendens
1364	"	Cyphus gibba
1365	"	" nigropunctata
1366	"	" Germari
1367	"	Eupholus Schonherrii
1368	"	Eustalis Thunbergii
1369	"	" adamantines
1370	"	Hypomeces squamosus
1371	"	Hypera nigrirostris
1372	"	Lordops Gyllenhallii
1373	"	Pachyrhynchus
1374	"	Platyomus
1375	"	" cæsus
1376	"	" alticollis
1377	"	Phyllobius pyri
1378	"	" argentatus
1379	"	" pomona
1380	"	Prepodis spectabiles
1381	"	" vittata

## HEMIPTERA.

1382	Boat Fly	Notonecta glauca
1383	Cuckoo Spit Fly	Aphrophora spumaria

## LEPIDOPTERA.

1384	Butterfly, Tortoiseshell	Vanessa Urtica
1385	" Alderman	" Atalanta

## ARACHNIDA.

1386	Cellar Spider	Tigenaria domestica
1387	Garden "	Epeira diadema
1388	House "	Angelena labyrinthica
1389	Hunting "	
1390	Long-legged Grass	Tetragnatha extensa
1391	Water "	Argyroneta aquatica

## DIPTERA.

1392	Blow Fly	Musca vomitoria
1393	Bee "	Volucella pullucens
1394	Crane "	Tipula oleracea
1395	Drone "	Eristalis tenax
1396	Dung "	Scatophagus
1397	Flesh "	Sarcophaga carnaria
1398	Fat "	Anthomyia lardaria
1399	Fantail "	Dolichopus
1400	Gad "	Hæmatopa pluvialis
1401	Garden "	Bibio hortulanus
1402	Hoverer "	Rhingia fostrata
1403	House "	Musca domestica
1404	Stinging,	Stomoxys calcitrans
1405	Sheephead	Asilus calceatus
1406	Tabanus "	
1407	Wasp "	Conops

## HYMENOPTERA.

1408	Ant	Formica fusca
1409	Corn Saw Fly	Cephus pygmaeus
1410	Hive Bee	Apis mellifica
1411	Hornet	Vespa crabro
1412	Ichneumon	Ophion luteum
1413	Wasp	Vespa vulgaris
1414	Butterfly, White	Pieris brassicae
1415	Caterpillar	" "

Moth, Brindle	
Beauty	Biston hirtaria
„ Vapourer	Orgyia antiqua
„ Plume	Pterophrus pendatactylus

**NEUROPTERA.**

Scorpion Fly	Panorpa communis
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**ABDOMEN, 1s. and 1s. 6d. each.****COLEOPTERA.**

Weevils	Cyphus gibba
„	„ Germari
„	„ nigropunctata
„	Eupholus Schönherrii
„	Eustalis adamantines
„	Hypomeces squamosus
„	Platymus alticollis
„	„ cæsus
„	Phyllobius argentatus
„	Prepodes spectabiles
„	„ glaucus

**SKINS, 1s. and 1s. 6d. each.****COLEOPTERA.**

Water Beetle Larva	Dytiscus marginalis
„	Hydrophilus piceus

**DIPTERA.**

Chamelion Fly Larva	
Horse Bot	Æstrus equi

**ARACHNIDA.**

Garden Spider	Epeira diadema
Water	Argyroneta aquatica

**PYLORUS, 1s. and 1s. 6d. each.****COLEOPTERA.**

Devil's Coach Horse	Ocepus olens
Rove	Staphilin
Weevil	Cyphus Germari
„	Curculio splendens
Water Beetle	Acilius
„	Dytiscus marginalis
„	Gyrinus natator
„	Colymbetes

**ORTHOPTERA.**

Cricket	Acheta domestica
„ Mole	Gryllotalpa vulgaris
Grasshopper	Gryllus campestris

**DERMAPTERA.**

Earwig	Forficula auricularia
House Beetle	Blatta Orientalis

**APHANIPTERA.**

Flea	Pulex irritans
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**STOMACH, 1s. and 1s. 6d. each.****COLEOPTERA.**

Click Beetle	Elatar segetum
Rove	„ Staphylinus

1454	Water Beetle	Dytiscus marginalis
1455	„	Colymbetes
1456	„	Acilius
1457	Weevil	

**DIPTERA.**

1458	Blow Fly	Musca vomitoria
1459	Crane	„ Tipula
1460	Fat	„ Anthomyia lardaria
1461	House	„ Musca domestica

**HYMENOPTERA.**

1462	Bee, Hive	Apis mellifica
1463	„ Wild	Bombus

**ORTHOPTERA.**

1464	Cricket	Acheta domestica
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**DERMAPTERA.**

1464*	House Beetle	Blatta
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**SPIRACLES, 1s. and 1s. 6d. each.****COLEOPTERA.**

1465	Cockchafer	Melolontha vulgaris
1466	„ Larva	„
1467	Goliath Beetle	
1468	Rove Beetle	Staphylinus
1469	Weevil Nut	Balalinius nucum
1470	Water Beetle	Acilius
1471	„	Colymbetes
1472	„	Dytiscus marginalis
1473	„ „ Larva	„
1474	„	Gyrinus natator
1475	„	Hydroporus
1476	„ „ Larva	„

**LEPIDOPTERA.**

1477	Butterfly,	
	Alderman	Vanessa Atalanta
1478	„ „ Larva	„
1479	„ Tortoiseshell	„ Urtica
1480	„ „ Larva	„
1481	„ White	Pieris Brassicae
1482	„ „ Larva	„
1483	Goat Moth Larva	Cossus ligniperda
1484	Silkworm	Bombyx Mori

**DIPTERA.**

1485	Blow Fly	Musca vomitoria
1486	„ Larva	„
1487	Crane	„ Tipula oleracca
1488	„ Larva	„
1489	Drone	„ Eristalis tenax
1490	Fat	„ Anthomyia lardaria
1491	House	„ Musca domestica

**HYMENOPTERA.**

1492	Bee, Hive	Apis mellifica
1493	„ Wild	Bombus
1494	Hornet	Vespa crabo
1495	Wasp	„ vulgaris

**ORTHOPTERA.**

1496	Cricket	Acheta domestica
1497	Grasshopper	Gryllus campestris

**TRACHEÆ.****COLEOPTERA.**

1498	Water Beetle	
	Larva	Dytiscus marginalis

1499	Water Beetle	<i>Hydrophilus piceus</i>
1500	" "	<i>Acilius</i>
1501	" "	<i>Colymbetes</i>

## LEPIDOPTERA.

1502	Butterfly, Tortoiseshell	
1503	Larva	<i>Vanessa Urticæ</i>
1504	Moth, Goat, Larva	<i>Cossus ligniperda</i>
1505	Silkworm	<i>Bombyx Mori</i>

## DIPTERA.

1507	Blow Fly	<i>Musca vomitoria</i>
1508	Crane "	<i>Tipula oleracea</i>
1509	Fat "	<i>Anthomyia lardaria</i>
1510	Centipede	<i>Lithobius</i>

## OVIPOSITOR.

## HEMIPTERA.

1511	Cuckoo Spit Fly	<i>Aphrophora spumaria</i>
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## DIPTERA.

1512	Blow Fly	<i>Musca vomitoria</i>
1513	Crane "	<i>Tipula oleracea</i>
1514	Drone "	<i>Eristales tenax</i>
1515	Fat "	<i>Anthomyia lardaria</i>
1516	Fan Tail	<i>Dolichopus brevipes</i>
1517	" "	<i>" tenium</i>
1518	Garden	<i>Bibio hortulans</i>
1519	Gad "	<i>Hæmatopa pluvialis</i>
1520	House "	<i>Musca domestica</i>

## HYMENOPTERA.

1521	Corn Saw Fly	<i>Cephus pygmæus</i>
1522	Ichneumon	<i>Ophium luteum</i>
1523	Saw Fly	<i>Tenthredo</i>
1524	" Corn "	<i>Cephus pygmæus</i>

## LEPIDOPTERA.

1525	Butterfly, Alderman	<i>Vanessa Atalanta</i>
1526	" White	<i>Pieris brassicæ</i>
1527	Moth Brindle	
	Beauty	<i>Biston hirtaria</i>
1529	Vapourer	<i>Orgyæ antiqua</i>

## NEUROPTERA.

1530	Dragon Fly	<i>Libellula</i>
1531	Scorpion	<i>Panorpa communis</i>

## ARACHNIDA.

1532	Garden Spider	<i>Epeira diadema</i>
1533	Long Legged	
	Grass Spider	<i>Tetragnatha extensa</i>

## ORTHOPTERA.

1535	Cricket	<i>Acheta domestica</i>
1536	Grasshopper	<i>Gryllus campestris</i>

## SPINNERETS.

## ARACHNIDA.

1537	Garden Spider	<i>Epeira diadema</i>
1538	Water "	<i>Argyroneta aquatica</i>

## SEXUAL ORGANS.

## COLEOPTERA.

1539	Water Beetle	<i>Dytiscus marginalis</i>
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## DIPTERA.

1540	Blow Fly	<i>Musca vomitoria</i>
1541	Crane	<i>Tipula</i>
1542	Fat "	<i>Anthomyia lardaria</i>
1543	Fan Tail	<i>Dolichopus</i>

## LEPIDOPTERA.

1544	Butterfly, Tortoiseshell	<i>Vanessa Urticæ</i>
1545	" White	<i>Pieris brassicæ</i>

## STINGS.

## HYMENOPTERA.

1546	Bee, Hive	<i>Apis mellifica</i>
1547	" Wild	<i>Bombus</i>
1548	Hornet	<i>Vespa crabro</i>
1549	Ruby Tail	<i>Chrysis</i>
1550	Wasp	<i>Vespa vulgaris</i>
1551	" Sand	<i>Odynerus spinipes</i>

## SETS OF OBJECTS, 1s. and 1s. 6d. each.

## TO ILLUSTRATE THE FOLLOWING CLASSES OF INSECTS:—

## COLEOPTERA.

## WATER BEETLE—DYTISCUS MARGINALIS.

1552	Eye
1553	Antennæ
1554	Palpi
1555	Jaw
1556	Head of Larva
1557	Spiracle
1558	Elytron
1559	Tracheæ
1560	" of Larva
1561	Pylorus
1562	Feet
1563	Sexual Organs

## LEPIDOPTERA.

## TORTOISESHELL BUTTERFLY—VANESSA URTICÆ

1564	Young Larva
1565	Spiracle
1566	" of Larva
1567	Hooklets of Pupa
1568	Tongue
1569	Eye
1570	Wing
1571	" Embryo
1572	Scales
1573	Foot
1574	Ovipositor
1575	Sexual Organs

**Y MOTH—HYPOGYMNA DISPAR.**

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**HYMENOPTERA.****BEE—APIS MELLIFICA.**

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**WASP—VESPÆ VULGARIS.**

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**DIPTERA.****OW FLY—MUSCA VOMITOREA.**

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1615 Foot  
1616 Ovipositor  
1617 Sexual Organs

**CRANE FLY—TIPULA OLERACEA.**

1618 Head  
1619 Poiser  
1620 Wing  
1621 Foot  
1622 Ovipositor  
1623 Sexual Organs

**DRONE FLY—ERISTALIS TENAX.**

1624 Tongue  
1625 Antennæ  
1626 Eye, Simple  
1627 " Compound  
1628 Poiser  
1629 Wing  
1630 Segment  
1631 Spiracle  
1632 Trachæa  
1633 Foot  
1634 Ovipositor  
1635 Sexual Organs

**FAT FLY—ANTHOMYIA LARDARIA.**

1636 Tongue  
1637 Antennæ  
1638 Eye, Simple  
1639 " Compound  
1640 Poiser  
1641 Wing  
1642 Segment  
1643 Spiracle  
1644 Trachæa  
1645 Foot  
1646 Ovipositor  
1647 Sexual Organs

**ARACHNIDA.****GARDEN SPIDER—EPHIRA DIADEMA.**

1648 Tongue  
1649 Palpi  
1650 Jaw  
1651 Foot  
1652 Skin of Body  
1653 Eyes  
1654 Ovipositor  
1655 Spinneret

**SPICULES OF GORGONIAS, ls. & ls. 6d. each.**

Gorgonia aureæ  
" anceps  
" Americana  
Gorgonia antipathes  
" abietina  
" cestrina  
" elongata  
" flabellum  
ow variety " flammeæ  
" glantulata  
" juncea  
" muricata  
" minicata  
" letosa  
" placecomus  
" pinnata  
" pet  
" reticulata  
" subreæ

1673  
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1679 Mixed, No. 1  
1680 " " 2  
1681 " " 3  
1682 " " 4  
Op.  
Op.  
Op.  
Op.  
&c., &c.

**Gorgonia succinæ**

" sasappo  
" umbraticæ  
" verrucosa  
" verticillaris  
" zanzibar

**SPICULES OF ALOYONIUM,  
ls. & ls. 6d. each.**

1683 Aloyonium digitatum  
1684 " glaucum  
1685 " latum



1686	<i>Alcyonium murale</i>	
1687	" <i>orachicladum</i>	
1688	" <i>tuberculosum</i>	
1689	" <i>triceranthimum</i>	
1690	<i>Isis hippuris</i>	
1691	<i>Melitaea ochracea</i>	
1692	" <i>aurantia</i>	
1693	" "	
1694	<i>Xenia florida</i>	Op.
1695	New Zealand	"
1696		
1697	Sea Pen	
1698	Tree Red Coral, <i>Corallum rubens</i>	
	&c.	

## SPIOULE OF SPONGE.

1699	Anmingabad, British East Indies
1700	Biclavate
1701	Bicurvate
1702	Dysideæ
1703	Expando ternate
1704	Euplectella aspergillum
1705	Geodia
1706	Neptune's Cup <i>Symerna</i>
1707	Stellate <i>Tethæ</i>
1708	Navigator's Island "
1709	Spinulate "
1710	Spiny
1711	Seven pointed
1712	Spongilla
1713	Sponge spiculæ in situ
	&c.

## GEMMULES OF SPONGE,

ls. and ls. 6d. each.

1714	<i>Pachymatisma Johnstoneana</i>
1715	Geodia
1716	Tethæ
1717	Tangataboo
1718	Undescribed
	&c.

## SPIOULE OF HOLOTHURIA,

ls. and ls. 6d. each.

1719	Holothuria, Fiji Islands	1
1720	" "	2
1721	" "	3
1722	" "	1
1723	" Japan	2
1724	" "	
1725	" Melbourne	
1726	" Monterey Bay	
1727	" New Zealand	1
1728	" "	2
1729	" "	3
1730	" "	4
1731	" Navigator's Island	1
1732	" "	2
1733	" "	3
1734	" "	4
1735	" Port Curtis	1
1736	" "	2
1737	" "	3
1738	" Port Essington	1

1739	Holothuria, Port Essington
1740	" "
1741	" Port Phillip
1742	" "
1743	" Holothuria tremula
1744	" " cucumari
1745	" " savigny
1746	" Pentactes pentacta
1747	" in situ
1748	" Chirodota violacea
	&c.

## SPIOULE OF SYNAPTA,

ls. and ls. 6d. each.

1749	Synapta	Synapta
		Digitata
1750	" in situ	
1751	" "	inhærans
1752	" in situ	
1753	" "	lappa
1754	" "	New Zealand
1755	" "	"
		&c.

## ZOOPHYTES AND CORALLINE

ls. and ls. 6d. each.

1756	Narrow leaved Fern wrack	<i>Flustra truncata</i>
1757	<i>Membranipora pilosa</i>	
1758	Snake's Head Coralline	<i>Anguinaria spatulata</i> O <sub>1</sub>
1759	Sickle Coralline	<i>Plumularia falcata</i>
1760	Sea Hair	"
1761	<i>Sertularia abietina</i>	
		&c.

## FORAMINIFEROUS SHELLS,

ls. and ls. 6d. each.

1762	Soundings, Red Sea, 37 Fathoms, 28.51 N., Long. 32.50
1763	„ Atlantic, 2225 Fathoms, 50.69, Long.
1764	„ „ 1965 Fathoms, 59.31, Long.
1765	„ China Sea, 540 Fathoms
1766	„ Lagullas Bank, 140 Fathoms, Cape of Good Hope
1767	„ Lagullas Bank, 80 to Fathoms, Cape of Good
1768	„ Cod Bank, 80 Fathoms
1769	„ Plymouth, 50 Fathoms
1770	„ Mediterranean, 1208 Fathoms &c.
1771	Anchor Mud, Harbour of Alexandria Fathoms
1772	Foraminiferous Shells, Chalk, Dover
1773	„ „ Barbadoes
1774	„ „ Conner
1775	„ „ Monter
1776	Orbitulite &c.

## SHELL SECTIONS,

ls. and ls. 6d. each.

1777	<i>Haliotes</i> . <i>Haliotes Splendens</i>
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1778	Haliotes	Japan
1779	"	Vulgaris
1780	Pinna	Tran. Section
1781	"	Vert. Section
1782	Coronula	regina
1783	Terebratula	Tran. Sec. Terebratula
1784	"	Vert. " "
1785	Hammer Oyster	" "
1786	Common	"
1787	Littorina	littoralis
1788	Balanus	

&amp;c.

## PEARL SECTIONS, 1s. and 1s. 6d. each.

1789	Pearl of Mussel	
1790	"	Alasmodon margaritifera
1791	"	Oriental (3s. and 5s. 6d.)

&amp;c.

## SPINES, 1s. and 1s. 6d. each.

1792	Spines of Echinus, Atlantic	
1793	"	Atratus
1794	"	Gulf of Mexico
1795	"	lucunter
1796	"	lividus
1797	"	Monterey Bay
1798	"	Mammillatus
1799	"	Phillipine Isles
1800	"	St. Helena
1801	"	Trigonarius
1802	"	small whole
1803		
1804	Spine of Cidaris	1
1805	"	2
1806	"	3
1807	Spines of	Brissiopses Op. Pol.
1808	"	Spatangus Op. Pol.
1809	"	Star Fish Op. Pol.
1810	"	" Op.
1811	Bones of	" Op.
1812	Brittle Star Fish, whole	Op.
1813	Star Fish	Op.

&amp;c.

## PALATES OF MOLLUSCA,

1s. and 1s. 6d. each.

1814	Chiton	Pol.
1815	Doris tuberculata	
1816	Haliotes tuberculata	Pol. Op.
1817	Helix aspersa	
1818	" Pomatia	
1819	" hortensis	Pol.
1820	Limpet	Patella vulgata Pol. Op.
1821		Lymnaea stagnalis
1822		Nassa reticulata
1823	Periwinkle	Littorina littoralis Pol.
1824	" fresh water	Planorbis corneus Pol.
1825		Paludina ovipora
1826		Trochus zizyphinus Pol. Op.
1827	Whelk	Buccinum undatum Pol.

&amp;c.

## BONES, 1s. 6d. each.

## MAMMALIA.

1828	Antelopes	Antelope cervicapra
1829	Ass	Equus asinus
1830	Bear	Ursus Americanus

1831	Beaver	Caster Fiber
1832	Chimpanzee	Troglodytes niger
1833	Cat	Felis domestica
1834	Dog	Canis familiaris
1835	Elephant	Elephas Indicus
1836	Extinct Irish Elk	Megaceros hibernicus
1837	Ferret	Rutorios furo
1838	Great Ant Eater	Myrmecophaga jubata
1839	Giraffe	Camelopardales Giraffe
1840	Horse	Equus caballus
1841	Hippopotamus	Hippopotamus amphibius
1842	Lion	Felis leo
1843	Man, frontal	Homo sapiens
1844	" under jaw	"
1845	" ulna	"
1846	" rib	"
1847	" clavicle	"
1848	" femur	"
1849	" tibia	"
1850	" fibula	"
1851	" diseased	"
1852	" foetal	"
1853	" animal portion	"
1854	" earthy	"
1855	Orang outang	Pithecius satyrus
1856	Ox	Bos taurus
1857	Puma	Felis concolor
1858	Rhinoceros	Rhinoceros Indicus
1859	Sheep	Ovis aris
1860	Tiger	Felis tigris

## AVIES.

1861	Ostrich	Struthio camelus
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## REPTILIA.

1862	Tortoise	Testudo elephantopus
1863	Alligator	Alligator lucius
1864	Boa	Python tigris

## PISCES.

1865	Conger Eel	Muraena conger
1866	Silurus	Silurus
1867	Tobacco Pipe Fish	Fistularia tobaccaria

## SPINES AND SOALES.

1868	Bony Pike	
	Scale	Lepidosteus osseus
1869	Blenny Scale	Blennius pholis
1870	Coffin Fish Bony	
	Scale	Ostracion vulgaris
1871	Eel Scale	Anguilla vulgaris
1872	Perch	Perca fluviatilis
1873	Sole	Solea vulgaris
1874	Saw Fish	Pristis cuspidatus
1875	Silurus Spine	Silurus

## TEETH, 1s. 6d. each.

1876	Man Molar	Homo sapiens
1877	" canine	"
1878	" incisor	"
1879	" decayed	"
1880	" structure of enamel	"
1881	Horse	Equus caballus
1882	Elephant Tusk	Elephas Indicus
1883	Great Ant Eater	Myrmecophaga jubata

## PISCES.

1884	Saw Fish	Pristis cuspidatus
1885	Psammodus Fossil	Psammodus
1886	Sting Ray	Myliobatis

## CARTILAGES, 1s. 6d. and 2s. each.

1887	Man, fetal	Homo sapiens
1888	" rib	"
1889	" trachea	"
1890	" old rib tran. sec.	"
1891	" vert. sec.	"
1892	Mouse, ear	Mus musculus
1893	Rhinoceros	Rhinoceros Indicus

## HAIRS, 1s. and 1s. 6d. each.

1894	Ass	Equus asinus
1895	Beaver	Caster fiber
1896	Bat, English	Vespertilla noctula
1897	" India	Pteropus edulis
1898	" Australia	"
1899	" Vampire	Vampirus spectrum
1900	Bear, American	Ursus Americanus
1901	" Polar	Ursus Maritimus
1902	Badger	Meles taxus
1903	Cat	Felis domestica
1904	Camel	Camelus bactrianus
1905	Deer, Mexican	"
1906	" Wapiti	Cervis Canadensis
1907	" Musk	Moschus moschiferus
1908	Duck Bill	Ornithorhynchus paradoxus
1909	Ermine	Mustela ermineo
1910	Elephant sec.	Elephas Indicus
1911	Gorilla	Troglodytes Gorilla
1912	Goat	Capra hircus
1913	Gibbon Monkey	Pithecius lar
1914	Giraffe	Camelopardalis Giraffe
1915	Great Ant Eater sect.	Myrmecophaga jubata
1916	Horse	Equus caballus
1917	Hare	Lepus timidus
1918	Hedgehog Quill	Erinaceus Europæus
1919	Kangaroo	Macropus major
1920	Lynx	Felis lynx
1921	Lion	Felis leo
1922	Mole	Talpa Europæa
1923	Mouse, white	Mus musculus
1924	" common	"
1925	Mannitee Whisker	Manatus Americanus
1926	Muskwash	Tiber zibethicus

1927	Man, aged	Homo sapiens	Pol
1928	" infant	"	
1929	" flaxen German	"	
1930	" black French	"	
1931	Opossum	Didelphis Virginiana	
1932	Flying	"	
1933	Pig	Sus scrofa	
1934	Peccary	Peccary sec.	
1935	Porcupine	Hystrix cristata	
1936	Raccoon	Procyon lotor	
1937	Reindeer	Cervus tarandus	
1938	Rhinoceros	Rhinoceros Indicus	
1939	Rat	Mus rattus	
1940	Shrew, or Field Mouse	Sorex araneus	
1941	Stone Martin	"	
1942	Sable Antelope	"	
1943	Squirrel	Sciurus vulgaris	
1944	Sea Mouse	Aphrodite aculeata	
1945	Seal, Falkland Island	Phoca	
1946	" Whisker	"	
1947	Tiger	Felis tigris	
1948	Wolf	Canis lupus	
1949	Walrus Whisker sect.	Trichechus rosamarus	Pol
1950	Water Rat	Arvicola amphibius	
1951	Wolverine	Gulo lusus	

## FEATHERS, 1s. and 1s. 6d. each.

1952	Humming Birds	Trochilus	
	blue	"	Op
1953	" yellow	"	Op
1954	" green	"	Op
1955	" red	"	Op
1956	" mixed	"	Op
1957	Military Mannikin	"	
1958	Peacock	Pavo cristatus	Op
1959	Penguin	Aptenodytes pennatii	
1960	Parrot	Chrysotis	
1961	Rifle Bird	Ptiloris paradiseus	Op
1962	Sun	"	

## WOOL, 1s. and 1s. 6d. each.

1963	Australian	
1964	Angora Goat	
1965	Cape Wool	
1966	East Indian	
1967	Leicester	
1968	Russian	

## INJECTED PREPARATIONS—OPAQUE, 1s. 9d. to 2s. 6d. each.

## MAMMALIA.

1969	Ape, Small Intestines	Pithecius
1970	Antelope, Chorion	Antelope etichore
1971	Cat, Liver	Felis domestica
1972	Cavey, Kidney	Cavia cobiza
1973	Donkey, Fœtal Membrane	Equus asinus
1974	Horse, Kidney	" caballus
1975	Kangaroo, Intestine	Macropus
1976	" large Intestines	Homo sapiens
1977	" small, do.	"
1978	" "	Vein white, Artery red
1979	Man, Stomach	Homo sapiens
1980	" Kidney	"

1981	Man, Liver	Homo sapiens
1982	" Lung	"
1983	" Lung Tubercule	"
1984	" Placenta	"
1985	" Arcolar tissue	"
1986	" Parotid Gland	"
1987	" Fat Vesicles	"
1988	" Tendon of Arm	"
1989	" Skin of Arm	"
1990	" sec.	"
1991	" Hand	"
1992	" sec.	"
1993	" Palmatal surface	"

1994	Man, Skin of Dorsal surface	Homo sapiens
1995	" Muscle	"
1996	" Scalp Section	"
1997	" Scrotum	"
1998	" Fœtal Fat	"
1999	" Skin	"
2000	" Scalp	"
2001	" Bone	"
2002	" Ear	"
2003	" Scrotum	"
2004	Monkey, Stomach	Cercopithecus
2005	" small Intestines	"
2006	" large "	"
2007	" Liver	"
2008	" Lung	"
2009	" Kidney	"
2010	" Skin	"
2011	" Hand	"
2012	" Finger	"
2013	Musk Deer, Kidney	Moschus moschiferus
2014	Ox, Ciliary Process of Eye	Bos taurus
2015	Raccoon, large Intestine	Procyon lotor
2016	Rabbit, Ear	Lepus cuniculus
2017	" Tongue	"
2018	" Kidney	"
2019	" large Intestines	"
2020	" small "	"
2021	" Parotid Gland	"
2022	Sheep, Chorion	Ovis aries
2023	" Uterus	"
2024	Wolf "	Canis lupus

## AVIES.

2025	Crane, Adjutant	Proventriculus, Gland
2026	Fowl, Esophagus	Gallus domesticus
2027	" large Intestines	"
2028	" small "	"
2029	" Proventriculus	"
2030	" Lung	"
2031	" Tracheæ	"
2032	" Rectum	"
2033	" Skin	"
2034	Heron, Stomach	Ardeo cinerea
2035	" " sec.	"
2036	Ostrich, large Intestines	Struthio camelus
2037	" small "	"
2038	" oviduct "	"
2039	Pigeon, Intestine	Columbia

## REPTILIA.

2040	Alligator, Stomach	Alligator lucius
2041	" small Intestines	"
2042	" large "	"
2043	Bon, Lung	Python tigris
2044	" Stomach	"
2045	" small Intestines	"
2046	" large "	"
2047	" Kidney	"
2048	" Tracheæ	"
2049	Black Snake	"
2050	Crocodile, Stomach	Crocodilus liporcatas
2051	" small Intestine	"
2052	" large "	"
2053	Frog, Lung	Rana temporaria
2054	" Stomach	"
2055	" small Intestine	"
2056	" large "	"
2057	" Allantoise	"
2058	" Foot	"
2059	" Skin	"
2060	Newt, Ova	Triton palustris
2061	" Foot	"
2062	Salamander, Tongue	Salamandra maculata
2063	" Lung	"
2064	Snake, Lung	Coluber natrix
2065	" large Intestines	"
2066	" small "	"
2067	" Liver	"
2068	" Rectum	"
2069	" Fat	"
2070	" Kidney	"
2071	" Skin	"
2072	Toad, Lung	Bufo vulgaris
2073	" small Intestine	"
2074	" large "	"
2075	" Stomach	"
2076	" Ova	"
2077	" Esophagus	"
2078	" Skin	"
2079	" Foot	"

## PISCES.

2080	Cod, Testicle	Gadus morrhue
2081	Eel, Branchia	Anguilla vulgaris
2082	Porpoise, Fin	Phocæna vulgura
2083	" Penis	"
2084	" Stomach	"

## TRANSPARENT INJECTED PREPARATIONS, 1s. 9d. to 3s. 6d each.

Specially prepared for M. Pillischer by a celebrated German Professor, and pronounced by the Medical Profession as the best ever seen.

2084*	Calf, Testicles	
2084†	" Intestines	
2084‡	" Mesenteric glands	
2085	Cat, Liver	Felis domestica
2086	" Kidney	"
2087	" Ear	"
2088	" Lip	"
2089	" Foot	"
2090	Dog, small Intestine	"
2091	Frog, Skin	"
2092	" Lung	"
2093	Ichneumon, Tongue	"

2094	Ichneumon, Ball of Foot	
2095	Man, Lung	Homo sapiens
2096	" Kidney, Vein Tubes	
2097	" Kidney	
2098	" Brain of Infant	
2099	" Placenta	
2100	" Gland Axilla	
2101	" Sebaceous Nose	
2102	" Meibomian Eyelid	
2103	" Labium	
2104	" Scalp	
2105	" Negro	

2106	Man, Scalp, Infant	
2107	" Eye	
2108	" Lip	
2109	" Tongue of Child	
2110	" Skin of Child	
2111	" Striated Muscle	
2112	" Testicle	
2113	Monkey, Talapoin	Lung
2114	" "	Kidney
2115	" "	Tongue
2116	" "	Nose
2117	" "	Palate
2118	" "	Upper Lip
2119	" "	Uterus
2120	" "	White Collared, Kidney
2121	" "	Bladder
2122	" "	Pylorus
2123	" "	Rectum
2124	" "	Mesentery
2125	" "	Striated muscle
2126	" "	Penis
2127	" "	Scalp
2128	" "	Ear
2129	" "	Lip
2130	" "	Finger, sect.
2131	" "	Ball of Foot
2132	" "	Hand
2133	" "	Meibomian gland
2134	" "	Eye-brow
2135	" "	Sole of Foot
2136	" "	Ball of Thumb
2137	Pig, Kidney	
2138	Rabbit, large Intestine	Lepus cuniculus
2139	" Bladder	
2140	" Kidney	
2140*	" Liver	
2140†	" Lung	
2141	" Brain	
2142	" Spinal Cord	
2142*	" Spleen	
2143	" Maxillary Gland	
2144	" Parotid Gland	
2145	" Muscle	
2146	" Skin	
2147	" Ear	
2148	" Tongue	
2149	" Upper Lip	
2150	Sheep, Hoof	Ovis aris
2151	" Feet	
2152	" Tendon of Leg	
2153	" Tongue	
2154	" Pastern	
2155	Tapir, Nose	
2156	Adder, Fat	
2157	Tortoise, Intestine	&c., &c.

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2197	Soda, Phosphate
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2199	" " Artificial
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2201	Spermatozoa, Man
2202	" " Newt
2203	Sugar, Diabetic
2204	Stearine
2205	Tyrosine
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2213	Tape Worm, Human
2214	" " Horse
2215	Trichina in Pork
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2217	" " Rabbit
2218	" " Intestinal
2219	" " Man &c.

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2221	" Lithic	Pol
2222	" Oxalic	Pol
2223	" Tartaric	Pol
2224	" Picrate	Pol
2225	" Arsenius	
2226	" Citric	Pol
2227	Aniline, Salt of	Pol
2228	" " Picrate	Pol
2229	Antimony, Tartarized	
2230	Ammonia, Oxalurate	Pol
2231	" " Thionurate	Pol
2232	" " Hippurate	Pol
2233	" " Oxalate	

Ammonia, Bitartrate	Pol.	2306	Strychnine, Chromate	Pol.
" Picrate		2307	" Sulphate	Pol.
Asparagin, No. 1	Pol.	2308	" Oxalate	Pol.
" No. 2	Pol.	2309	" Tartrate	Pol.
Barium, Chloride	Pol.	2310	Thallium, Bitartrate	Pol.
" Platino Cyanide	Pol. Op.	2311	" Carbozotate	Op.
Brucine		2312	" Oxalate	Pol.
" Sulphate	Pol.	2313	" Platino Cyanide	Pol.
Berberine	Op.	2314	" Sulphate	Pol.
Borax	Pol.	2315	" Sulpho Cyanide	Pol.
Barytes	Pol.	2316	" Tartrate	Pol.
" Tartrate	Pol.	2317	" of Aluminum	Pol.
Caffein	Op.	2318	Tin, Bisulphide	
Codein		2319	Tungsten, Double Tungstate of	Op.
Copper, Acetate	Pol.	<b>MINERALS, 1s. and 1s. 6d. each.</b>		
" Sulphate, No. 1	Pol.	2320	Alum, Native	Op.
" " No. 2	Pol.	2321	Antimony, Native	Op.
" Ammonia Sulphate	Pol.	2322	" Needle	Op.
" Sulphate of Cobalt	Pol.	2323	" Glance, Cornwall	Op.
" " Zinc	Pol.	2324	Bismuth, Topatate, Bolivia	Op.
" Native Arseniate		2325	" Glance	Op.
" Native Carbonate		2326	Copper, Moss	Op.
Chromium, Sesquichloride		2327	" Native	Op.
" Oxalite of Potass		2328	" Ruby	Op.
Cadmium, Sulphate	Pol.	2329	" Peacock	Op.
" Chloride	Pol.	2330	" Glance, Cobija, Bolivia	Op.
Isatine		2331	" Fibrous Carbonate, Chili	Op.
Indigo Crystals	Op.	2332	" Silicate, Copiapo	Op.
Iron, Sulphate of Cobalt	Pol.	2333	Cinnabar, California	
" " Ammonia	Pol.	2334	Chalcopyrite Sotersdal, Norway	
Lead, Nitrate	Op.	2335	Gold, Native Australia	Op.
" Iodide	Op.	2336	" Vancouver's Island	Op.
Lime, Tartrate	Pol.	2337	" of Quartz	Op.
" Oxalate	Pol.	2338	" Precipitated	Op.
" " from Calculus		2339	" Leaf	Op.
Magnesium, Platino Cyanide	Pol. & Op.	2340	Glass, Decomposed	Op.
Magnesia, Picrate	Pol.	2341	Iron, Elba	Op.
Manganese, Sulphate of Ammonia	Pol.	2342	" Glance	Op.
Mercury, Iodide	Pol.	2343	" Micaceous	Op.
Narcotine		2344	" Pyrites, Sulphate of Iron	Op.
Potass, Bitartrate	Pol.	2345	" Volcanic	Op.
" Chlorate, No. 1	Pol.	2346	" Pyrites, Canada	Op.
" " No. 2	Pol.	2347	Iridium	Op.
" Bichromate	Pol.	2348	Lead, Sulphuret	Op.
" Chromate	Pol.	2349	Manganese in Talc	
" Iodide	Op.	2350	Orpiment, Native Yellow	Op.
" Nitrate	Pol.	2351	Osmium	
" Sulphate of Nickel	Pol.	2352	Pontlandite, Norway	
" Oxalate of Chromium, No. 1	Pol.	2353	Rhoetizite, Tyrol	Pol.
" " No. 2	Pol.	2354	Rutile, Norway	Pol.
" Biuxalate	Pol.	2355	Silver, Native	Op.
" Sulphate of Copper	Pol.	2356	" Fibrous	Op.
Potassium, Ferricyanide	Pol.	2357	" Electro	Op.
Phloridzine		2358	" Arborescent	Op.
Picrotoxine		2359	" Crystals	Op.
Piperine		2360	" Ore, California	
Quinine, Iodide	Pol.	2361	Selenite	Op.
Roseaniline, Acetate	Pol.	2362	Titanium, Nitride	Op.
" Chloride	Op.	2363	Tin, Oxide, Native Australia	Op.
Roseine	Op.	2364	Tremolite	Pol.
Soda, Citrate	Pol.	2365	Zinc, Blend, near Arkersund, Sweden	Op.
" Tartrate	Pol.	2366	Zeolite	Pol.
" Borate	Pol.	<b>MINERALS AND FOSSILS.</b>		
" Oxalate	Pol.	2367	Agate, Siberia	
Sodium, Nitroprusside		2368	" Norway	Pol.
Sulphur	Op.	2369	" Fortification	Pol.
Santonine		2370	" Ribbon	Pol.
Salicine	Pol.	2371	" Nubian Desert	Pol.
Sugar	Pol.			
Silver, Chromate	Pol.			
Strychnine	Pol.			
" Nitrate	Pol.			

2372	Agate, in Quartz		2444	Obsidian from Vesuvius	
2373	" with Algae Green		2445	Opalized Wood	
2374	" " Yellow		2446	Eozoon	
2375	" India	Pol.	2447	Porites Pyriformes	
2376	" Oberstine	Pol.	2448	Potstone, Australia	
2377	" Iridescent		2449	Pertite	C
2378	Agate Mocha Stone		2450	Pitch Stone, Isle of Arran	
2379	" Moss		2451	" Saxony	
2380	Adularia Moon Stone	Op. & Pol.	2452	Porphyry	
2381	Amazon Stone	Pol.	2453	" Uralite-Wales	
2382	Avanturine Red or Sun Stone	Op.	2454	Porphyry	C
2383	" Green		2455	Quartz, with Fluid Cavities	
2384	" Silix	Pol.	2456	" Iron Pyrites	
2385	" Artificial	Op.	2457	" Crystals	
2386	Barytes, Sulphate, Native	Pol.	2458	Sandstone, Australia	F
2387	Brecciated Labrador	Pol.	2459	Syenite	
2388	" Jasper	Pol.	2460	Slag Copper Furnace	C
2389	Basalt, Rowleyrag, Staffordshire		2461	" Iron	
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2399	Ditrupea Plana		2471	" " Vert. "	
2400	Eudiolite	Pol.	2472	" Lepidostrobilus Tron "	
2401	Eozoon, Serpentine, Galway		2473	" " Vert. "	
2402	Flint, Feramiferous Shells		2474	Wood Fossil, Antigua	
2403	" Isle of Wight Sponge Remains		2475	" Africa South	
2404	" Xanthidia		2476	" " Central	
2405	" Polythamalia		2477	" Cairo	
2406	" Coral		2478	" Derby	
2407	" Pyxidicula Globata		2479	" Egypt	
2408	" Sponge Siphonia pyriformes		2480	" India	
2409	Fossil Coral		2481	" Kremnitz	
2410	" Tooth Shark		2482	" Lough Neagh	
2411	" Tooth Genacrodus hastula		2483	" Republic of Uruguay	
2412	" Angleodus Diademo		2484	" Whitby	
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2417	" Westmoreland	Pol.	2489	" Tree Fern	
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2423	Labrador Spar	Op. & Pol.			
2424	Labradorite	Op.			
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2426	Lapiz Lazula	Pol.			
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2512	" Stone Nubinn Deser

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 2514 Pinna Shell Fibre  
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 2516 " Cassowary  
 2517 Skin of Prawn  
 2518 " Shrimp  
 2519 Tendon of Ox  
 2520 " Sheep  
 2521 " Horse  
 2522 " Ostrich  
 2523 Whale Hair  
 2524 " Bone  
 2525 White Human Hair  
 2526 Young Oysters  
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 2548 The Creed, Illuminated  
 2549 " Plain  
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 2555 Deer Stalking Returning  
 2556 Sir Colin Campbell  
 2557 Sir John Burgoyne  
 2558 Sir Walter Scott  
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 Battle of Trafalgar  
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 2572 Robert Burns  
 2573 The Tribute Money  
 2574 Prince Frederick William of Prussia  
 2575 The Farm Yard  
 2576 Moses Striking the Rock  
 2577 Daniel in the Lion's Den  
 2578 Finding of Moses  
 &c., &c.

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 2584 Hope Deferred

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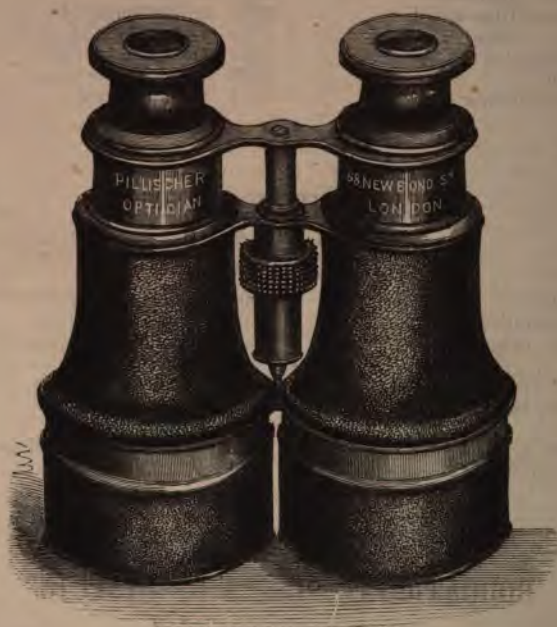
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Pillischer's Binocular Opera, Race, Field, and Marine  
Glasses.



FIGS. 242 TO 249.



FIGS. 250 TO 251.

## Binocular Opera Glasses, with 12 Lenses

(Folding Leather Case included).

	APERTURE OF OBJECT GLASSES.					
	12 Line.	15 Line.	17 Line.	19 Line.	21 Line.	24 Line.
Mounted in Metal, japanned black	£ s. d. 2 10 0	£ s. d. 3 10 0	£ s. d. 4 0 0	£ s. d.	£ s. d.	£ s. d.
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Mounted in Ivory and Gilt	3 10 0	4 5 0	..	5 0 0	6 5 0	8 0 0
Ditto, all Ivory	4 0 0	4 15 0	..	5 15 0	7 0 0	9 5 0
Ditto, Tortoise shell, and Gilt	4 5 0	4 15 0	..	6 10 0	7 15 0	10 10 0
Ditto, Pearl and Gilt	4 5 0	4 15 0	..	6 10 0	7 15 0	10 10 0
Ditto, enamelled Silver	5 0 0	5 10 0	..	7 0 0	8 10 0	12 12 0
Ditto, in Aluminium	4 15 0	5 15 0				

Centre joints to any of the above from 10s. to 15s. 6d. extra.

**Liischer's Binocular Field, Race, Yachting and Tourist's Glasses,** 2 lenses, in black japanned or oxidized brass mountings, having sliding sun-shades, and entirely with leather, made especially to withstand the heat and damp of tropical climates, and a solid leather strap case included.

12 lines Binocular Field Glass (see Engraving)	£ s. d. 7 0 0
" Ditto ditto	6 0 0
" Ditto ditto	4 10 0
" Ditto ditto	4 0 0

Centre joints are charged 10s. to 15s. extra.

**Liischer's New Improved Military Regulation Binocular Glass,** into the regulation pouch, with 12 lenses, mounted in solid oxidized or japanned metal to withstand the effects of tropical climates, having sliding sun-shades and a strong case with sling.

No. 1 (see Engraving)	£ s. d. 3 10 0
No. 2 (see Engraving)	4 10 0

Centre joints to the above, 10s. extra.

**Binocular Opera, Race and Field Glasses,** with 6 lenses only, mounted in black oxidized brass cases, and covered with leather, having large field of view and great magnifying power, sun-shades and strong leather strap case.

26 lines	£ s. d. 4 10 0
24 "	4 0 0
21 "	3 10 0

**Binocular Opera Glasses,** without sun-shades, mounted in metal and covered with leather.

21 lines, in soft folding case	£ s. d. 2 5 0
19 " ditto	2 0 0
17 " ditto	1 15 0
15 " ditto	1 15 0
12 " ditto	1 10 0
10 " ditto	1 1 0



FIGS. 254, 255, 266 &amp; 267.

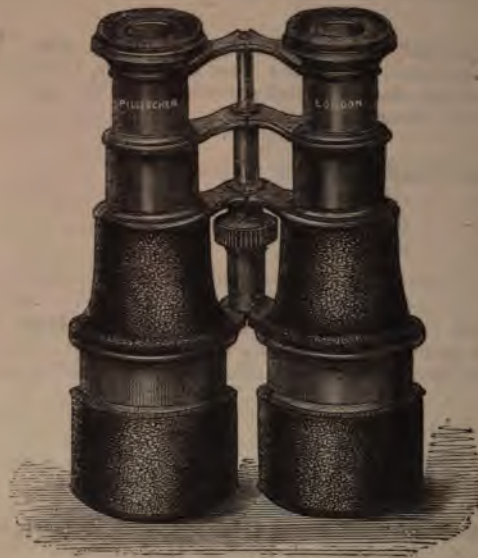


FIG. 263.

### Pillischer's Aluminium Field Glasses,

*One-third the weight of Brass.*

As originally shown by him at the Great Exhibition, 1862.

The lenses with which these Binoculars are furnished are ground upon true mathematical principles, defining objects with great clearness and flatness of field, and though the greatest possible magnifying power is obtained, they are perfectly free from distortion and colour the margin of objects.



		£	s.	d.
6.	17 line Binocular Field Glass with 12 lenses, having double-adjusting draws and sliding sun shades, and fitted with a leather strap case, or a soft folding case . . . . .	7	10	0
7.	19 " Ditto ditto ditto . . . . .	8	10	0
8.	21 " Binocular Field Glass with 12 lenses; black japanned or bright-polished Aluminium sliding sun shades, the whole covered with dark leather, and fitting into a solid plain black leather strap case . . . . .	9	0	0
9.	21 " Ditto ditto with double draws . . . . .	10	10	0
10.	24 " Ditto ditto single " . . . . .	10	10	0
11.	24 " Ditto ditto centre joints . . . . .	12	10	0
12.	24 " Ditto ditto double draws, giving greater magnifying power . . . . .	12	12	0
13.	24 " Ditto ditto with centre joints . . . . .	14	14	0
14.	12* " Binocular, without sun shades, in soft folding case . . . . .	4	15	0
15.	15* " Binocular, in soft folding . . . . .	5	15	0

\* These Binoculars, although of a size small enough to be carried in one's pocket, have a large field of view, with great magnifying power.

### Pillischer's Military Reconnoitring Binocular Field Glass.

As used by the Officers of the Imperial Austrian Army.

From the advantages this Binocular possesses, being small enough to fit into the pouch, weighing a mere trifle, and having a large field of view, with great magnifying power, besides movement by which the glasses can be brought exactly opposite the centre of the eye, it recommends itself greatly in favour of being used in Her Majesty's Army and Navy, especially by that branch serving in tropical climates.

The Binocular can be had in two sizes.

66.	17 line With object glasses $1\frac{1}{2}$ -inch clear aperture, sliding sun shades, and black leather strap case (see Engraving) . . . . .	7	10	0
67.	19 " Ditto object glasses $1\frac{1}{2}$ -inch clear aperture . . . . .	8	10	0
68.	Pillischer's New Improved Binocular Yachting or Deerstalking Glass, having great magnifying power combined with large field, with 12 lenses, sliding sun shades, centre joint and a solid leather sling case . . . . .	16	16	0
69.	Ditto ditto with extra high power . . . . .	18	18	0

### Portable Telescopes.



Figs. 270 to 278.



Fig. 281.



Figs. 288 and 289.



Figs. 292 to 299.

270.	12-inch	Three Draw Portable Telescope, in polished brass (see Engraving)	10s. 6d. to	1
271.	12	" Ditto ditto in German silver		1
272.	18	" Ditto ditto in polished brass	21s. to	1
273.	18	" Ditto ditto in German silver		2
274.	24	" Ditto ditto in polished brass, 31s. 6d. to		2
275.	24	" Ditto ditto in German silver		3
276.	30	" Ditto ditto in polished brass	45s. to	3
277.	30	" Ditto ditto in German silver		4
278.	12	Three Draw Portable Reconnoitring Military Telescope, oxidised brass mounting, covered with leather and caps and straps (see Engraving)		2
279.	18	" Ditto ditto ditto		3
280.	24	" Ditto ditto ditto		4
281.	30	" Ditto ditto ditto 4 draws		5
282.	36	" Ditto ditto ditto		7
283.	12	Three Draw Portable Telescope, in every respect like the above, only mounted in German Silver		2 1
284.	18	" Ditto ditto ditto		4
285.	24	" Ditto ditto ditto		5 1
Any of the above Telescopes are supplied with a pancreatic eye-piece, which increases the power by more than one-half, at 10s. 6d. extra.				
286.	24-inch	Improved Portable Deerstalking Telescope, having extra large field, with great penetrating and defining power, mounted in oxidised brass, covered with leather and caps and strap		6 1
287.	30	" Ditto ditto ditto		7 1
288.	12	Midshipman's Telescope, mounted in brass, one draw (see Engraving)		2
289.	12	" Ditto ditto " in German silver		2 1
290.	18	" Ditto ditto " in brass		2 1
291.	18	" Ditto ditto " in German silver		3
292.	18	Naval Telescope, tapered body, covered with leather, mounted in bright or oxidised brass (see Engraving)		2 1
293.	18	" Ditto ditto ditto in German silver		3
294.	24	" Ditto ditto ditto in brass		3
295.	24	" Ditto ditto ditto in German silver		3 1
296.	30	" Ditto ditto ditto in brass		4 1
297.	30	" Ditto ditto ditto in German silver		5
298.	36	" Ditto ditto ditto in brass		5 1
299.	36	" Ditto ditto ditto in German silver		7

The above Telescopes are now manufactured by M. PILLISCHER in *Aluminium*, weighing less than half of those made in brass, at greatly reduced prices.

Particulars and prices sent on application.

Astronomical Stand Telescopes.

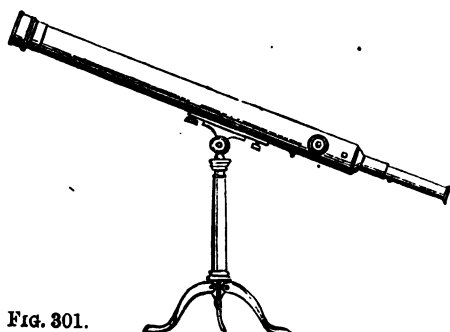


FIG. 301.

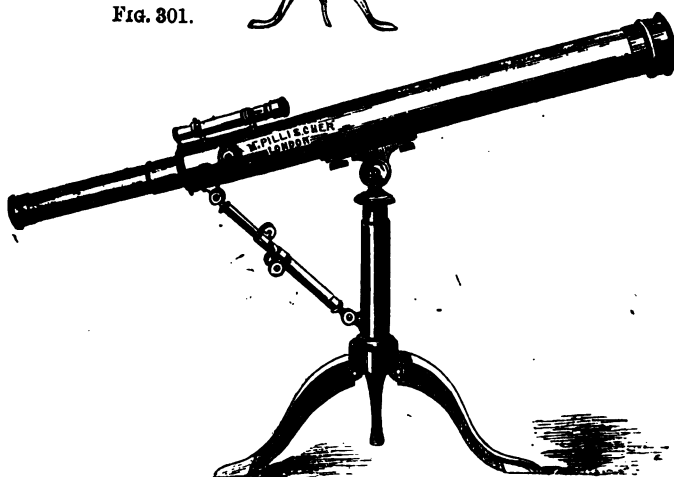


FIG. 304.



FIG. 308.

	£ s.
300. One and half foot Telescope, on brass table stand, 2-inch object-glass, two day powers 25 and 35 diameter, and one Astronomical power 65 diameter, the whole packed in mahogany case . . . . .	6 10
301. Two and half foot Telescope, on handsome brass table stand, rack and pinion adjustment to the eye-piece, 2½ in. object-glass, two day powers 30 and 40 diameters, and one Astronomical power 75 diameters, the whole packed in mahogany case (see Engraving) . . . . .	9 10
302. Two and half foot Telescope, with a vertical rack, all the rest the same . . . . .	10 10
303. Three foot Telescope, on brass table stand, 2½-inch object glass, vertical rack adjustment, two day powers 30 and 40 diameter, one Astronomical 90 diameter, the whole packed in solid mahogany case . . . . .	14 10
304. Three and half foot Telescope, on solid brass table stand, with rack and pinion adjustment to the eye-pieces, Achromatic finder, and vertical rack motion, diameter of object glass, 3-inch clear aperture, two day powers 35 and 50 diameters, and three Astronomical 80, 120 and 170 diameters, the whole packed in solid mahogany case (see Engraving) . . . . .	27 0
305. Ditto, with vertical and horizontal motions, all the rest the same . . . . .	31 0
306. Three and half foot Telescope, with object-glass, 3½-inch clear aperture, Achromatic finder, horizontal and vertical motions, all the rest the same as the above, magnifying power of day eye-pieces 45 and 70 diameters, and three Astronomical 100, 170 and 200 diameters . . . . .	46 0
307. Four and half foot Telescope, on extra solid brass table stand, with horizontal and vertical motions, Achromatic finder, object-glass 4½-inch clear aperture, day powers 50 and 75 diameter, Astronomical 70, 110, 170 and 300 diameters, the whole packed in strong mahogany case . . . . .	60 0
308. Four and half foot Telescope, in every respect similar to above, only mounted on a solid firm wooden stand (see Engraving) . . . . .	70 0
309. Equatorial Telescope, object glass, 5 inches clear aperture, about 60-inch focus, circles divided on silver, clock work with motion, illuminating apparatus with diaphragm, to regulate the intensity of light, six Huyghenian and four micrometer eye-pieces, supported on a solid iron stand, complete, with all the latest improvements . . . . .	225 0
310. Ditto ditto object-glass, 4½-inch aperture . . . . .	160 0
311. Ditto ditto " 4 " " . . . . .	115 0
Altitude and Azimuth, Transit and other instruments, &c., &c., made to order.	
312. Solid Mahogany or Oak Garden Stands, with and without brass stretchers, for the above telescopes . . . . .	from £2 10s. to £8 and 10 0

### Pillischer's Improved Achromatic Stereoscopes.

These Stereoscopes possess extra high power and large field of view, and define the objects in the most perfect manner. The lenses, which are achromatic, have an adjustment regulate the focal distance, by which all sights may be suited.

313. Stereoscope in handsome rosewood or walnut case, with silvered glass reflector, and mounted upon a handsome brass stand, with telescopic draws . . . . .	2 10
314. Ditto, with German silver stand . . . . .	3 5
315. Ditto, without a stand . . . . .	1 10
316. Ditto, plainer make . . . . .	1 1
317. Achromatic Stereoscope, extra powerful, and having large field of view (see Engraving) . . . . .	2 5
318. Stereoscopic Cases arranged to hold stereoscope and a stand, 1 dozen glass and 2 dozen paper slides, wood to match the stereoscope . . . . .	2 0
319. Ditto ditto to hold 2 dozen glass and 4 dozen paper slides . . . . .	2 10
320. Ditto ditto to hold stereoscope without stand, 1 dozen glass and 2 dozen paper slides . . . . .	1 10
321. Ditto ditto to hold 2 dozen glass and 4 dozen paper slides . . . . .	2 0
322. Plain Non-Achromatic Stereoscopes . . . . .	from 7s. 6d. to 1 1





FIG. 317.



FIG. 324.

### Improved Achromatic Revolving Stereoscopes.

	£	s.	d.
323. Achromatic revolving Stereoscope to hold 50 glass or paper slides, with adjusting eye-pieces and silvered glass reflector, in plain mahogany or walnut case	4	10	0
324. Ditto of superior make (see Engraving)	7	10	0
325. Achromatic revolving Stereoscope to hold 100 glass or paper slides, with adjusting eye-pieces and silvered glass reflector, in plain mahogany or walnut case	7	10	0
326. Ditto of superior make	10	0	0
Achromatic Stereoscopes to hold 200 and 300 Views made to order.			

### Glass Slides for the Stereoscope.

327. Architecture and Scenery of <b>Egypt</b> .—Cairo—The Pyramids—Medinet Haboo—Girgeh—Dendera—Luxor—Karnac—Koum Ombo—Philæ—Derr—Abou Simbel, &c.	0	5	6
328. Views in <b>Palestine</b> .—Jerusalem—Bethany—Nazareth—Hebron—Gaza—Damascus—Baalbec—The Cedars of Lebanon—The Jordan—The Dead Sea, &c., &c.	0	5	6
329. Views in <b>Switzerland</b> .—Lakes of Lucerne, Brientz, Thun, Geneva, &c.—The Glaciers of Rosenlani, Grindenwald, Mer de Glâce, The Rhone, Gorner Glacier, &c.—Various Views of Mont Blanc, Monte Rosa, Mont Cervin, The Jungfrau, &c.—Passes of the Grimsel, Great Scheideck, Wengern Alp, &c.—Views of Chamounix, Zermatt, Meiringen, Interlachen, Berne, Friburg, &c.	0	5	6
330. Views in the <b>Pyrenees</b> .—Cirque de Gavarnie—Eaux Chaudes—Eaux Bonnes—St. Sauveur—Cauterets Lac Bleu, Lac de Gaub, &c.	0	5	6
331. Views of <b>Paris</b> .—Panoramas, showing every point of interest—Notre Dame—Pantheon—Luxembourg, &c., &c.	0	5	6



332. Views on the **Rhine**.—Castles of the Rheinfels, Stolzensfels, Gutfenfels, Drachenfels, &c.—Cities and Villages of Cologne, Coblenz, Mayence, Bingen, St Goar, &c., &c. . . . . each 0 5
- 333 Views at **Heidelberg**.—Showing the various parts of the Castle, and the Valley of the Neckar, &c., &c. . . . . each 0 5
334. Views in **Spain**.—Magnificent Panoramas of Granada, Seville, Toledo, Cuenca, Gibraltar, &c.—Scenery of the Ronda—Interiors of the Alhambra and Alcazar, &c. . . . . each 0 5
335. Views in the **Tyrol** . . . . . 0 5
336. Views of the various **European Towns** of Frankfort, Baden-Baden, Vienna, Prague, Nuremberg, Wurtzburg, Stuttgart, Reignitz, Bamberg, Rome, Florence, Pisa, Athens, Constantinople, &c., &c. . . . . each 0 5

#### Paper Slides for the Stereoscopes.

337. Views of London, Paris, Rome, Venice, Switzerland . . . . . each 0 1
338. **English Lake Scenery**, interiors and exteriors of English and Foreign Cathedrals, views of the Abbeys of England, Scotland and Ireland . . . 0 1
339. Views of Italy, Spain, Belgium, Holland, Germany, and the Rhine Province 0 1
340. Views of Antiquities of Egypt and Nubia, the Holy Land, Athens, &c. . . 0 1
341. Instantaneous Views of the Clouds, Waves of the Sea, &c. . . . . each 0 1
342. Illuminated Views and Groups, &c., showing day and night effects . . . each 0 2

#### Boxes and Cabinets for the Preservation of Stereoscopic Objects.

343. Plain mahogany Box, with lock and key, to hold 24 glass slides in racks . . 0 15
344. Ditto, in rose or walnut wood . . . . . 1 0
345. Ditto, to hold 30 glass and 50 paper slides . . . . . 1 10
346. Ditto, to hold 48 glass slides only . . . . . 2 5

Boxes and Cabinets of larger sizes to hold any number of slides made to order.

### The Graphoscope.

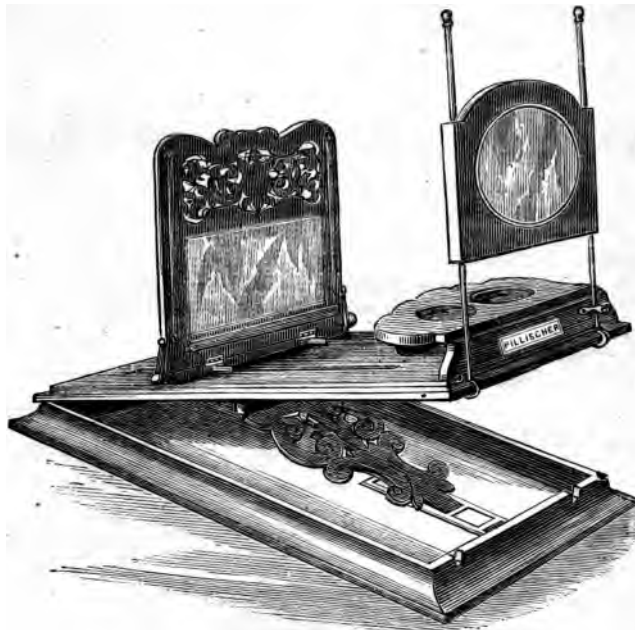


FIG. 349.

**The Graphoscope** is an instrument for developing and giving a most beautiful a stereoscopic effect to engravings, prints, photographs, &c. By a very simple arrangement can also be converted into a stereoscope, suitable both for transparent or opaque views. The instrument is simple and easy to use, and is made portable so as to pack into a small compa

347. No. 1. **Graphoscope** in plain mahogany wood . . . . . 3 10
348. No. 2. **Ditto**, walnut wood superior make . . . . . 5 0
349. No. 3. **Ditto** ditto ditto . . . . . 6 10

Plain and coloured views in great variety for the Graphoscope, from 2s. 6d. each.

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STANDARD  
METEOROLOGICAL INSTRUMENTS,  
WHEEL AND PORTABLE MERCURIAL  
AND  
ANEROID BAROMETERS,  
THERMOMETERS,  
ANEMOMETERS, RAIN GAUGES,  
&c., &c.

## Standard Barometers.



FIG. 350.



FIG. 351.

## Standard Barometers.

- £   s.   d.
- 350. Standard Barometer**, constructed on Newman's principle.
- The Tube—of an internal diameter of  $\frac{5}{50}$ , filled with boiled and rectified mercury—is supported by two strong, square bronzed metal pillars. The Cistern is made partly of glass, to admit sufficient light for setting and reading the ivory on zero point. In this Instrument the ivory point forms a part of the Scale, and, in order to take the barometric reading, is moved simultaneously with it upon the surface of the mercury in the Cistern, by an endless screw adjustment, immediately above the right-hand side of the Cistern.
- The Vernier is adjusted by a rack and pinion movement, and reads to  $\frac{1}{100}$  and  $\frac{1}{1000}$  part of an inch. A Thermometer is attached, the bulb end of which is immersed in mercury.
- The whole Instrument can be revolved and set to any angle between two strong metal brackets, which are attached to a solid polished Oak on Mahogany board.
- The Instrument is made portable for transmission to the country or abroad, and accompanied by Directions for fixing and adjusting (*see Engraving*) . . . 20 0 0
- 351. Standard Barometer**, constructed on Fortin's principle.
- The Tube—of an internal diameter 0.45, filled with boiled and rectified mercury—is entirely inclosed in a strong metal tube. On the upper part of the Tube is engraved the Scale, which reads by means of a Vernier, adjusted by rack and pinion movement, to  $\frac{1}{100}$  parts of an inch.
- The Cistern is made partly of glass, to admit sufficient light when taking an observation.
- The reading is effected by raising the mercury in the Cistern to a fixed ivory point, properly called the Zero of the Scale, by means of a thumb-screw acting upon a flexible surface, underneath the Cistern.
- A Thermometer is attached to the front of the Barometer. The Instrument is mounted on a strong Oak on Mahogany polished board, and can be turned in any direction when taking an observation. For travelling it can be made portable, to insure safety in transmission, and is accompanied by Directions for fixing and adjusting (*see Engraving*) . . . 10 10 0
- 352. Ditto, ditto**, with a smaller tube, 0.40 internal diameter . . . 8 10 0

NOTE.—A Certificate from the Kew Observatory is supplied with any Standard Barometer, at an extra charge of about 12s. 6d. or 15s. 6d.

## Pediment or Portable Barometers,

Being, next to the Standard Mercurial, the most reliable and perfect Instruments.

- 353. Pediment Barometer**, with exposed tube, engraved ivory or silvered metal front, sliding index and thermometer, mounted in oak, walnut or rosewood . . . £1. 5s. and 1 15 0
- 354. Ditto ditto** of same size, &c., with protected tube rack verniers, and glass front . . . 2 10 0
- 355. Pediment Barometer**, with larger tube and plate glass front, single rack vernier reading to  $\frac{1}{100}$  to the inch, and thermometer, mounted in oak, walnut, or rosewood . . . 3 10 0

## Pediment or Portable Barometers.



FIGS. 358 and 360.



FIG. 363.



	£	s.	d.
356. <b>Pediment Barometer</b> in elegant case of walnut or mahogany, bold ivory front, with single rack vernier, reading to $\frac{1}{300}$ to the inch, and large thermometer . . . . .	4	0	0
357. <b>Ditto larger size</b> , having double rack vernier, all the rest the same, being a more sensitive instrument . . . . .	6	0	0
358. <b>Pediment Barometer</b> , with large tube, boldly engraved ivory front, with double rack vernier, reading to $\frac{1}{300}$ to the inch, bold thermometer, case of solid oak ( <i>see Engraving</i> ) . . . . .	5	0	0
359. <b>Ditto ditto</b> , with extra large tube and movable index to thermometer, all the rest the same . . . . .	7	0	0
360. <b>Pediment Barometer</b> , with extra large tube, fitted to a very bold and handsome solid oak frame, extra large thermometer with movable index, the front fitted with double rack vernier, reading to $\frac{1}{300}$ to the inch . . . . .	8	10	0
361. <b>Admiral Fitzroy's Barometer</b> . This instrument consists of a tube of large bore fitted to a solid oak frame, firmly screwed to withstand outdoor exposure, the front where the tube is seen has an opening, so that the mercury can be seen from both sides, and is divided on the plan suggested by Admiral Fitzroy, single rack vernier, reading to $\frac{1}{300}$ to the inch, and a bold thermometer . . . . .	5	0	0
362. <b>Ditto ditto</b> , with extra large tube, double rack vernier and movable index to thermometer . . . . .	8	10	0
363. <b>Ditto ditto</b> , with handsomely covered frame ( <i>see Engraving</i> ) . . . . .	10	10	0

All kinds of Barometers and Clocks to correspond, suitable for halls, libraries, dining or drawing rooms, yachts, and public institutions, in plain or carved oak, mahogany, walnut, ebony, and rosewood frames to match with the furniture or architecture, made to order to any drawing or design.

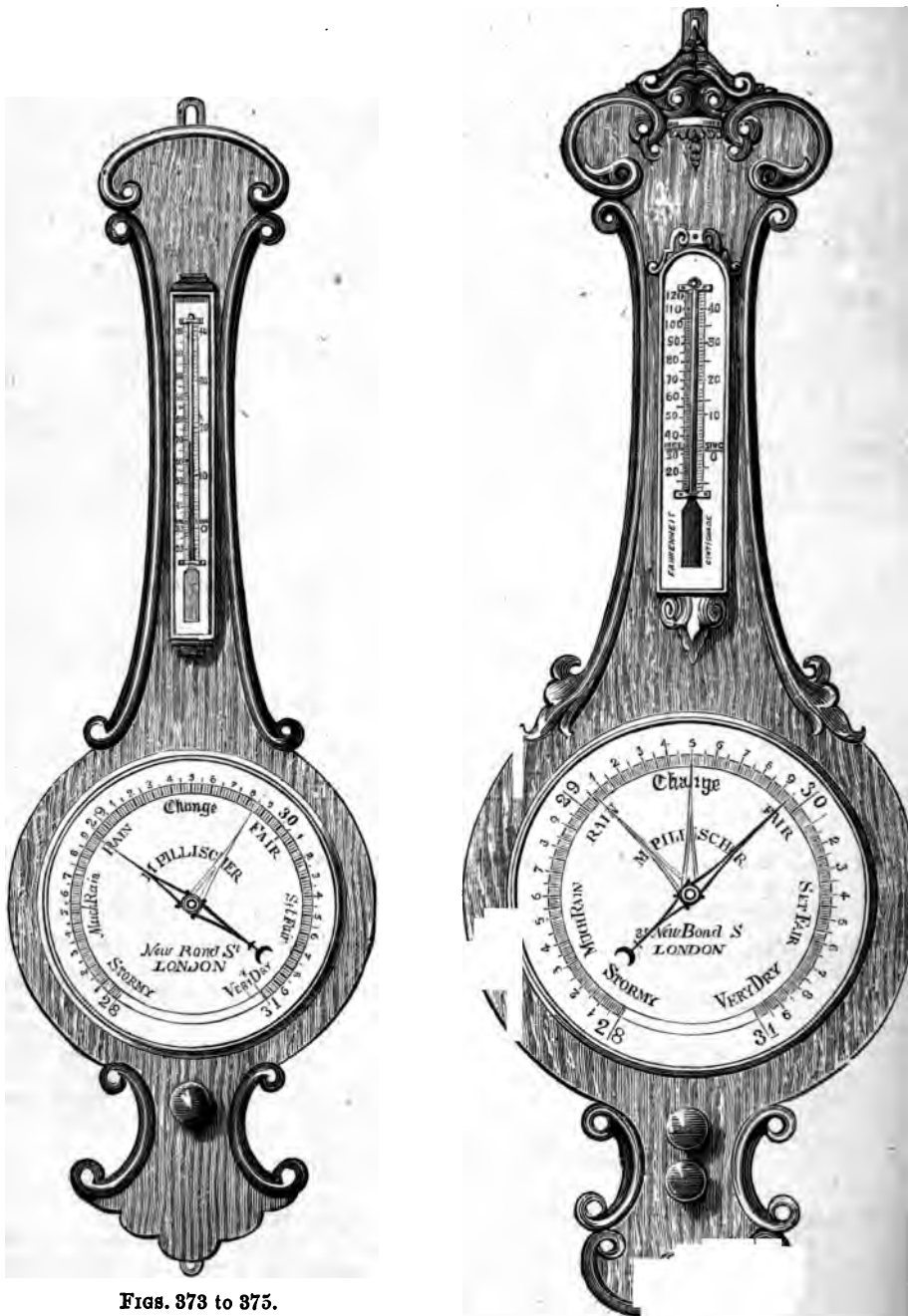
### Portable Marine Barometers.

364. <b>Marine Barometer</b> in oak, mahogany, or rosewood frame, with ivory scale, rack vernier, thermometer in front, capillary tube, the mercury steady during the most violent oscillations . . . . .	£2. 10s. and	3	10	0
365. <b>Ditto ditto</b> of superior construction, with sympiesometer attached, serving as a check upon the barometer, and gimbals to balance in all directions . . . . .	£4. 10s. and	5	10	0

### Portable Mountain Barometers.

366. <b>Pillischer's Improved Portable Mountain Standard Barometer</b> , mounted in metal frame, rack and pinion vernier reading to $\frac{1}{300}$ to the inch, thermometer in front and a tripod stand, packed in a solid leather travelling case . . . . .	9	10	0
367. <b>Portable Mountain Barometer</b> , Gay-Lussac's, with syphon tube, mounted in metal frame, with thermometer, rack and pinion verniers, reading to $\frac{1}{300}$ to the inch by subtracting to bottom reading from the top, in solid leather case . . . . .	6	10	0

## Wheel or Dial Barometers.



FIGS. 373 to 375.

FIGS. 376 to 378.



The Wheel or Dial Barometer, though not so perfect as the Pediment or Portable Barometer, is in many instances preferred to it. In its present improved form as constructed by M. Pillischer, it can be confidently recommended for all practical purposes as a most useful and reliable instrument, having the advantage that by simply "tapping" the glass with the finger, the hand will be seen distinctly to rise or fall, and thus assist the observer in the prognostication of the weather.

		£	s.	d.
368.	Wheel Barometer in plain mahogany, oak, walnut or rosewood frame, engraved and silvered dial 8-inch diameter, and thermometer	2	10	0
369.	Ditto ditto with dial 10-inch diameter	3	10	0
370.	Wheel Barometer of superior make in oak, mahogany, walnut or rosewood frame, handsomely engraved and silvered dial 8-inch diameter, and thermometer	3	10	0
371.	Ditto ditto with dial 10-inch diameter	4	10	0
372.	Ditto ditto with dial 12-inch diameter	5	10	0
373.	Wheel Barometer in handsome oak, walnut or rosewood frame, moulded edges, engraved dial 8-inch diameter, with thermometer ( <i>see Engraving</i> )	4	0	0
374.	Ditto ditto with dial 10-inch diameter	5	0	0
375.	Ditto ditto with dial 12-inch diameter	6	0	0
376.	Wheel Barometer in solid oak frame, handsomely carved, of the best description, engraved and silvered dial, plate-glass front and double index, with bold thermometer, 8-inch diameter ( <i>see Engraving</i> )	7	0	0
377.	Ditto ditto 10-inch diameter	8	10	0
378.	Ditto ditto 12-inch diameter	12	10	0
379.	Wheel Barometer of the very best description, mounted in oak, mahogany, walnut and rosewood frames, elaborately carved in various designs from	8	10	0 to 20 0 0

### Sympiesometers.

380.	Sympiesometer, mounted in walnut or rosewood cases, with revolving index	2	10	0 and 3 0 0
381.	Ditto portable for travelling, in morocco case, about 10 inches long	2	15	0 and 3 5 0
382.	Ditto Pillischer's improved, for measuring heights of mountains from 10 to 15 thousand feet, in case	4	0	0

### Aneroid Barometers.

The term *Aneroid* is an anomalous derivation from the Greek *a* without, and *neros* wet, literally signifying a barometer constructed without liquid; it was invented about 1844 by M. Vidi, of Paris, and excited considerable attention amongst the meteorologists of that time.

In its essential parts, this instrument consists of a corrugated metal chamber exhausted of air, properly called the vacuum box, the undulations caused by atmospheric pressure are transmitted by multiplying springs and levers to a movable index on a scale, similar to that of an ordinary mercurial wheel barometer. It is now an acknowledged fact by the most eminent meteorologists, that the Aneroid Barometer, owing to its perfect construction and accuracy of indication, merits the greatest confidence and estimation from the public, and considering that not only personal comfort, but the safety of thousands can be promoted by its aid, it may deservedly claim universal patronage.

The late *Admiral Fitzroy*, one of the greatest authorities of our times, states: "The aneroid is quick in showing the variation of atmospheric pressure; and to the navigator, who knows the difficulty at times of using barometers, this instrument is a great boon, for it can be placed anywhere, quite out of harm's way, and is not affected by the ship's motion, although faithfully giving indication of increased or diminished pressure of air. In ascending or descending elevations, the hand of the aneroid may be seen to move like the hand of a watch, showing the height above the level of the sea, or the difference of level between places of comparison."

*Sir Henry James, R.E.*, of the Ordnance Survey Department, in a series of instructions for taking meteorological observations, speaking of the Aneroid Barometer,



says: "This is a most valuable instrument; it is extremely portable; I have had one use for upwards of ten years, and find it to be the best form of barometer as a weather-glass that has been made."

The Aneroid Barometer, through its portability, is also an excellent instrument for taking altitudes, and measuring the heights of mountains with the greatest accuracy up to 16,000 feet, and will prove to travellers and alpine tourists a most useful and valuable companion.

M. Pillischer has devoted much care and attention to the improvements and manufacture of Aneroid Barometers, from the smallest, the size of a watch, about  $1\frac{1}{4}$  inch diameter, for the vest pocket (of which M. P. is the original maker), to extra large size about 24-inches diameter, suitable for halls, public institutions, coast-guard stations, & every instrument supplied at his establishment is guaranteed to be of the best quality & highest class of workmanship.

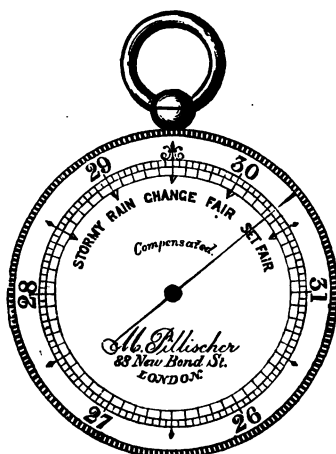


FIG. 383.

### Pillischer's Improved Pocket Aneroid Barometers.

Size of an ordinary watch, as originally shown by him at the Great Exhibition, 1862.

			£	s.
383.	Watch-size Aneroid	in metal case, best make (see Engraving)	4	5
384.	Ditto	in solid silver case	From £5. 10s. to	7 10
385.	Ditto	for altitudes divided 10,000 to 15,000 feet, in gilt		
	metal case		5	5
386.	Ditto	in solid silver case	From £6. 10s. to	7 10
387.	Ditto	with Thermometer and Compass, in gilt		
	metal case		5	5
388.	Ditto	divided 10,000 to 15,000 feet	From £5. 10s. to	6 10
389.	Ditto	in solid silver case, extra small size, $1\frac{1}{4}$ inch diameter	7	10
390.	Ditto	in gold cases	from	12 0
391.	Aneroid, $3\frac{1}{2}$ inch diameter, with Thermometer, and fitted in morocco		4	5
	case			
392.	Ditto	ditto divided for altitudes 10,000 to 15,000 feet	From £5. 10s. to	6 10
393.	Ditto	$4\frac{1}{2}$ inch diameter, in morocco case	4	5
394.	Ditto	ditto divided for altitudes 10,000 to 15,000 feet	From £5. 10s. to	6 10
394*	Aneroid Barometers, various sizes, of second quality, in cases		from	1 10
	A stout leather strap case to the two last-named Instruments, 10s. extra.			



FIG. 395.



FIG. 396.

25. Aneroid Barometer	8 inches diameter. in a mahogany case, and fitted with a large curved scale, see Engraving	£ 4 4
26. Improved Clock or Laboratory Aneroid Barometer	8 inches diameter, with Thermometer fitted and containing magnetic machinery, without recording or ink case with curved surface, see Engraving	4 17 6
27. Ditto	8 inches diameter	5 5 0
28. Ditto	8 inches diameter	7 10 0

Aneroid Barometers suitable for public institutions, &c., fitted with pen or curved circular magnetic ink, or shrouded wooden frame, & used against the wall.

29. Aneroid Barometer	with 4-inch engraved and silvered dial, and chromo- metric circular frame	4 0 0
30. Ditto	with 4-inch dial	4 10 0
31. Ditto	with 4-inch dial	5 5 0
32. Ditto	with 4-inch dial	6 10 0

The price of curved frames to the above Barometers depends on the quantity, and style of engraving.

Large Aneroid Barometers suitable for Public Institutions, &c., made to any design or series.

## Fillischer's Improved Barometrograph. or Self-registering Aneroid Barometer.

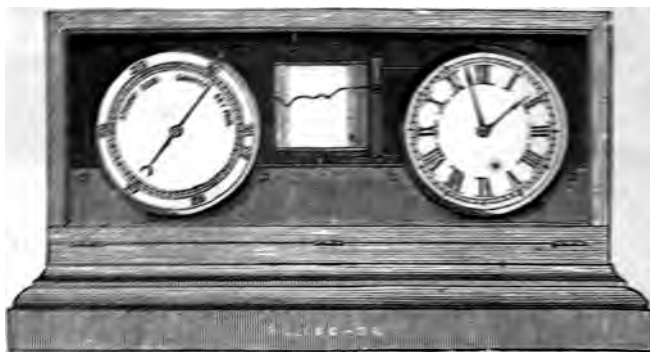


FIG. 401\*.

The illustration is one-eighth the size of the Instrument.

This instrument is designed to show at a glance the various fluctuations caused by atmospheric pressure in the barometer. It consists of a large aneroid and an eight-day clock, each having a dial about eight inches diameter. Between these is placed, in a vertical position, a cylinder four inches in diameter, with a paper attached to it ruled to coincide with the barometer scale. Near to this paper, a pencil guided by a metal rod moves up and down, prompted by the rise or fall of the aneroid, and imprints every hour upon it, by a simple mechanism connected with the clock, the changes that have occurred. Thus a black-dotted undulated line is produced, showing at a glance the height of the barometer, whether it is falling or rising, how long it has been doing so, and at what rate; whether the rise or fall is at the rate of one-tenth per hour or one-tenth in twenty-four hours. All these are particulars most essential to know in prognosticating the weather, and can only be obtained with an ordinary barometer by very frequent and regular observations. The instrument, being free from complication, is specially constructed to suit the general public as well as the meteorological observer; it is handsome in appearance, and not easily put out of order.

401\*. Improved Barometrograph, mounted in a handsome walnut or  
ebonized case . . . . . from 25 0 0



FIGS. 412 to 415.



FIGS. 416 to 420.



FIGS. 422 to 424.

### Standard Thermometers.

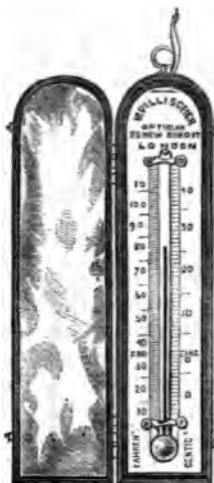
- |  | £ | s. | d. |
|--|---|----|----|
| 402. Standard Thermometer, with engine-divided stem, on metal or porcelain scales, the uniformity of the internal diameter of the bore being carefully tested by experiments, and the index error ascertained; the scale can be had divided either <i>Fahrenheit</i> , <i>Centigrade</i> or <i>Reaumur</i> , in case | 5 | 0  | 0  |
| 403. Standard Thermometer, with engine-divided stem, carefully tested  | 2 | 5  | 0  |
- NOTE.—Each Instrument is accompanied with a Certificate from the Kew Observatory.

### Thermometers for In-door Use, Travelling, &c.

- |  |   |    |   |
|--|---|----|---|
| 404. Thermometer of plain boxwood, 6 inches or 8 inches long from 1s. 2d. to     | 0 | 2  | 6 |
| 405. Ditto ditto 10 inches   | 0 | 3  | 6 |
| 406. Ditto of polished boxwood, bevelled edges and best enamelled tube, 8 inches | 0 | 6  | 6 |
| 407. Ditto 10 „  | 0 | 8  | 6 |
| 408. Ditto 12 „  | 0 | 10 | 6 |
| 409. Ditto, on porcelain scale, 8 inches long                                    | 0 | 5  | 6 |
| 410. Ditto ditto 10 „  | 0 | 8  | 6 |
| 411. Ditto ditto 12 „  | 0 | 12 | 6 |
| 412. Ditto ditto with best enamelled tube, 8 inches (see Engraving)              | 0 | 12 | 6 |
| 413. Ditto ditto ditto ditto 10 „  | 0 | 15 | 6 |



Figs. 425 to 428.



Figs. 431 and 433.



Figs. 429 and 430.

				£ s d
414.	Thermometer, on porcelain scale, for out-door purposes	12 inches	.	0 17
415.	Ditto ditto ditto ditto	18 "	.	2 5
416.	Ditto, with ivory engraved scale on ebony, and best enamelled tube, suitable for the drawing-room or library, 6 inches (see Engraving)		.	0 12
417.	Ditto ditto	8 "	.	0 16
418.	Ditto ditto	10 "	.	1 1
419.	Ditto ditto	12 "	.	1 10
420.	Ditto ditto	15 "	.	2 10
421.	Thermometer entirely of ivory, or ivory scale and ebony stand, with glass shade over, suitable for the mantel-piece or library and drawing-room table, 12s. 6d., 14s. 6d., 21s. to £2 and		.	5 0
422.	Bath Thermometer, with porcelain scale, in japanned tin case, 8 inches (see Engraving)		.	0 5
423.	Ditto ditto	10 "	.	0 8
424.	Ditto ditto	12 "	.	0 12
425.	Pocket Thermometer, in boxwood, with sunk tubes, 3 inches or 4 inches (see Engraving)		.	0 7
426.	Ditto ditto	5-inches	.	0 8
427.	Ditto in ivory, with sunk tubes, 3 inches or 4 inches		.	0 12
428.	Ditto ditto	5 inches	.	0 15
429.	Ditto ivory scale on ebony, revolving in German silver tube, to prevent the tube being broken, 3 inches or 4 inches (see Engraving)		.	0 12
430.	Ditto ditto	5 inches	.	0 15
431.	Ditto ditto fitted in handsome morocco case lined with velvet, 3 inches or 4 inches (see Engraving)		.	0 7
432.	Ditto ditto	5 inches or 7 inches	.	0 10
433.	Ditto ditto	8 inches or 9 inches	.	0 15

### Clinical Thermometers.

As used by the leading members of the *Medical Profession*, the principal *Hospitals* and *Infirmaries*, &c.

434.	Pillischer's New Improved Self-registering Clinical Thermometer in solid sterling silver case, 3 inches long	.	0 12
435.	Ditto ditto ditto 4½ inches long	.	0 15

\*\*\* A Kew Certificate with the above, 1s. 6d. extra.



5.	Clinical Thermometer,	in German silver case, 6 inches long	£ s. d.
7.	Ditto	ditto in wooden case, for Hospital use	0 10 6
8.	Ditto	ditto as arranged by <i>Professor Aitken</i> ; one thermometer is bent and reads <i>in situ</i> , one ditto is straight and <i>self-registering</i> ; 8 or 10 inches long, in case	1 5 0

### Chemical and Various Thermometers for Special Purposes.

9.	Chemical Thermometer,	on boxwood scale, reading to 300°, with projecting bulb	from 0 3 6
10.	Ditto	ditto to 600°, hinged scale	0 7 6
11.	Ditto	ditto engine divided on stem	0 10 6
12.	Solar Radiation or Black Bulb Thermometer,	the stem is engine-divided, and inclosed in a glass tube, on brass stand	1 10 0
13.	Terrestrial Radiation Thermometer,	with transparent bulb, engine-divided stem inclosed in a glass tube, on brass stand	1 10 0
14.	Hot-bed Thermometer,	in mahogany frame, the stem inclosed in metal tube	1 2 6
15.	Brewer's Thermometers	from 5s. 6d. to	0 12 6
16.	Milk Thermometers,	for dairy use	0 7 6
17.	Oven Thermometer,	for high temperatures	0 15 0
18.	Steam-pressure Thermometers,	in strong metal cases	1 15 0
19.	Lactometer for detecting the adulteration in milk	from 2s. 6d. to	0 4 6

All kinds of Thermometers made to order.

### Maximum and Minimum or Self-registering Thermometers.

**Self-Registering Thermometers** are intended to determine the *highest* temperature of the day and the *lowest* during the night. The mechanical arrangement by means of which the registration is effected is most simple and ingenious. A steel index is introduced into the tube of the thermometer, and, previous to taking an observation, is required to be brought in contact with the column of the same. As the temperature changes, the index is moved up or down, and left at the extreme points of heat or cold. Instruments constructed to register the greatest heat are designated by *maximum*, to register the lowest cold, *minimum*, and for both extremes of temperature, *maximum* and *minimum* thermometers.

50.	10-inch Boxwood Minimum Thermometer	from	£ s. d.
51.	10 " Zinc ditto ditto	"	0 3 6
52.	12 " Porcelain ditto ditto	"	0 4 6
53.	12 " Ditto Maximum ditto	"	0 10 6
54.	10 " Sixe's Maximum and Minimum ditto, zinc scale, in japanned metal case ( <i>see</i> Engraving)	15s. 6d. and	1 1 0
55.	12 " Ditto ditto	"	1 5 0
56.	14 " Ditto ditto	"	1 10 0
57.	10 " Sixe's ditto, with porcelain on glass scale	"	1 6 0
58.	12 " Ditto ditto ditto	"	1 10 0
59.	14 " Ditto ditto ditto	"	1 15 0
60.	10 " Ditto with porcelain on glass scale, mounted on solid mahogany or oak bracket, with brass supports, to set the thermometer at any angle ( <i>see</i> Engraving)	"	2 5 0
61.	12 " Ditto ditto ditto	£2. 10s. and	2 15 0
62.	14 " Ditto ditto ditto	"	3 0 0
63.	18 " Ditto ditto ditto	"	4 10 0
64.	10 " *Improved Dimenueon Maximum and Minimum Thermometer on zinc scale, in japanned metal case ( <i>see</i> Engraving)	"	1 1 0
65.	12 " Ditto ditto ditto	"	1 5 0
66.	14 " Ditto ditto ditto	"	1 10 0

\* This and the following are the only Thermometers which may be thoroughly relied upon not to get out of order in travelling.

467.	10-inch Improved Dimenson Maximum and Minimum Thermometer, on enamelled glass scale . . . . .	£ 8
468.	12 " Ditto ditto ditto . . . . .	1 6
469.	14 " Ditto ditto ditto . . . . .	1 10
470.	Pillischer's Pocket Maximum and Minimum Thermometer, on polished boxwood scale, fitted into a strong leather case suitable for travelling . . . . .	1 4
471.	Ditto ditto mounted on ivory scale and ebony back . . . . .	£1. 10s. and 2 0



Figs. 454 to 459.

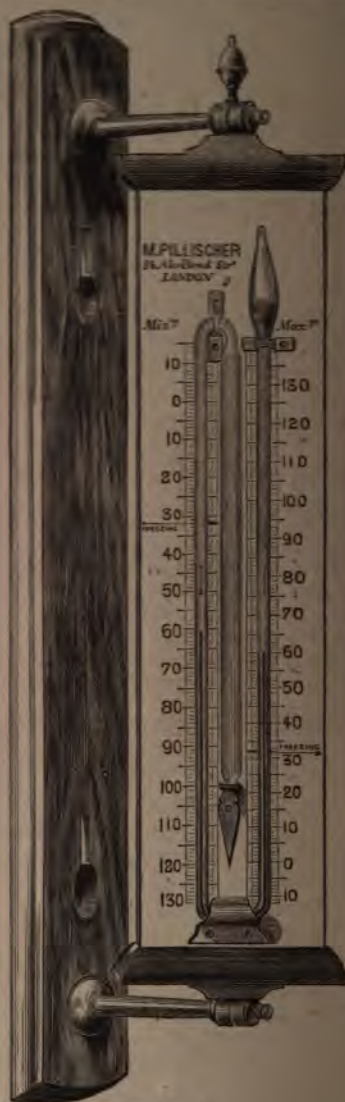


Fig. 461.



Figs. 464 to 469.



# Hygrometers,

OR

## Dry and Wet Bulb Thermometers.

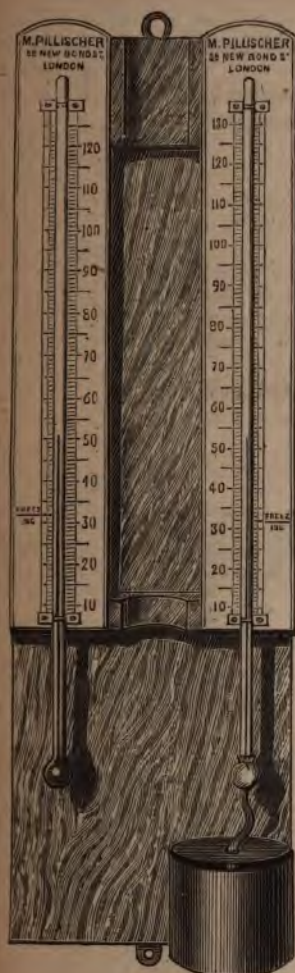


FIG. 474.

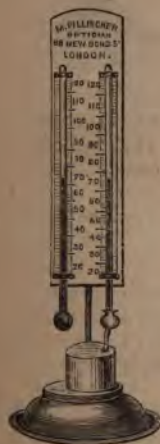


FIG. 475.

The term *Hygrometer* is derived from the Greek *hygros*, wet, and *metros*, to measure, and is applied to an instrument devised for the purpose of indicating the amount of *humidity* or *dryness* in any place or locality, and can be highly recommended not only to the scientific meteorologist, but also to the general public, as a most valuable instrument for domestic use.

To the seafarer it is of immense importance, and will at once be recognised from the fact that it is very frequently a matter of doubt whether rain or wind is to be followed from a fall of the quicksilver in the barometer. By joint observations with the Hygrometer this can be easily ascertained, for, if the indication is of a relative dryness, *wind alone*; if on the contrary, *rain, accompanied by wind*, may be expected.

The great advantage this instrument offers for the *sick room* cannot be over-rated. It is well known that in cases of any disease of the *pulmonary* and respiratory organs, the condition of the atmosphere in an apartment or locality greatly accelerates or retards the progress towards convalescence of a patient. Those who by their occupations, family ties, or by the will of circumstances, are not permitted to avail themselves of the salubrious influences of milder zones, can, with the aid of the Hygrometer, produce an *artificial climate*, suitable to their respective constitutions, by the most simple means. When an apartment is *too dry*, it is required to maintain evaporation from a tea-urn or similar apparatus, until the atmosphere is charged with sufficient moisture; if, on the contrary, it be *too humid*, it may be rendered dry by raising the temperature, or introducing such substances which most readily absorb it.

The Hygrometer is, further, most useful to detect the dampness of an apartment or bed; in the laboratory of the chemist; and to regulate the state of air in manufactories, malting-, green- and hot-houses, &c. It should be placed where it is not influenced by the radiation of heated bodies or exposed to currents of air, and the cotton attached to the wet bulb renewed about once in a month.

£ s. d.

472. Mason's Hygrometer, or wet and dry bulb Thermometer, on zinc scale, in japanned metal case . . . 0 17 6
473. Ditto ditto on porcelain scale . 1 6 0
474. Ditto ditto ditto best make, on mahogany bracket . . . 2 10 0
475. Mason's Hygrometer, portable on brass stand, with cylindrical metal cover for protection . . . 2 10 0
476. Ditto ditto ditto and packed into a neat mahogany case . . . 2 2 0
477. Daniel's Hygrometer or dew point Thermometer, complete in case. . . 2 10 0



## Pyrometers,

For measuring the expansion of various bodies, and to indicate extremely high temperature

478. Ferguson's Pyrometer to indicate the difference of expansion in metals	£ 3 5
479. Daniell's ditto ditto, for extreme temperatures	4 4

## Anemometers.

480. Lind's Anemometer for indicating the force and direction of the wind by the depression or elevation of a column of water in a glass tube, above and below the zero of a scale	2 2
481. Robinson's Anemometer to indicate the velocity of the wind ; consists of four semispherical cups, with their open diametric planes exposed to the wind ; they are mounted on four arms, carried by a strong vertical shaft, and caused to revolve by the velocity of the wind, which is indicated on graduated dial in yards, furlongs and miles .	£4. 5s. and 5 5
482. Self-Registering Anemometers of the most improved principle, to record the force and direction of the wind on a dial inside the building, constructed to houses or public buildings	from 40 0
As per estimate.	

## Rain Gauges.



FIG. 483.

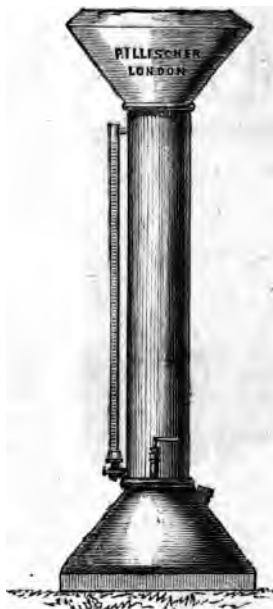


FIG. 486.

483. Howard's Portable Rain Gauge, copper funnel with turned brass ring, five inches diameter, graduated glass measure to show $\frac{1}{100}$ " fall of rain, evaporating copper dish, accompanied with printed instructions for use (see Engraving)	1 1
484. Glaisher's Rain Gauge, made of strong tin, black japanned, and graduated glass measure	0 18
485. Ditto ditto made of copper	1 10
486. Pillischer's improved Rain Gauge. An accurately turned 8-inch diameter conical receiving chamber is supported by a cylindrical pedestal, to the lower end of which is attached a glass tube graduated to inches, tenths, and hundredths of an inch, showing at any time by simple inspection the quantity of rain fallen. A stopcock is provided for letting the water off when not in use ; tin, black japanned (see Engraving)	1 15
487. Ditto ditto in strong, bright copper	2 10
488. Rain Gauge, as above, with 12-inch diameter receiving chamber ; tin, black japanned	2 10
Ditto ditto in strong bright copper	3 15

SPECTACLES, EYE-GLASSES,  
AND  
OPHTHALMIC INSTRUMENTS.

## Spectacles and Eye Glasses.

Of all the organs of sense with which the All-wise Author of nature endowed man, the eye is the most noble and delicate; not only comfort and happiness, but the very life of thousands depends upon the preservation of this valuable organisation from diseases and injuries.

To devise means for the protection and preservation of the human eye, and to alleviate the numerous ailments to which it is subjected in the course of nature, has occupied the attention of the greatest scientific men of their respective ages. The ancients were unacquainted with artificial means for assisting and preserving the eye; their occupation and mode of life did not induce such a necessity. An inscription on the tombstone of Salvino d'Armati, a Florentine, who flourished about the thirteenth century, informs us that he was the inventor of lenses for aiding defective vision; and Roger Bacon, a contemporary, is supposed to have introduced them into England. It was, however, not until several centuries later that they became known, and their beneficial influence universally acknowledged.

Various improvements have been effected at different periods, but the greatest and most important discoveries have been made within the last two decades, and no branch of the Sciences has made such progress as that which treats upon ophthalmic surgery. Not only are eyes assisted and preserved by the use of various lenses, but affections which were formerly pronounced hopeless and incurable, effectually cured by their aid.

*The functions of spectacle lenses, and the mode in which they act, and the refraction of light in the eye, depend upon one and the same optical law; a deviation from the normal state of this refraction in the eye must, therefore, be compensated by the adoption and use of the proper lenses.*

From this it will be obvious that the material of which spectacle lenses are made, and the mathematical truth and exactness with which they are worked, is by no means unimportant. Common spectacle lenses are made of ordinary window glass, full of veins and flaws, which have a most deleterious influence upon the eye. The material used by M. PILLISCHER is the best *optical plate glass*, or finest rock crystal, better known as Brazilian pebbles. Nothing better can be adopted than the former for all kinds of optical lenses, though the preference is given to the latter on account of its great hardness, being less liable to scratch, and the diaphorous and great refractive power it possesses.

Nor are the frames, into which the lenses are fitted, of a secondary consideration; they must be constructed to fit the face carefully, so as not to be too wide or too narrow; in either case they would feel most uncomfortable, besides the lenses, not being central with the centres of the pupils of the eye, would be apt to produce a painful sensation.

It cannot be too forcibly impressed upon the minds of those who have to resort to the use of spectacles, to exercise great caution in their selection, and to consult a respectable optician, whose theoretical knowledge and practical experience qualifies him for this important purpose. If the value of vision and the delicate organisation of the eye were duly estimated, the irretrievable loss caused to thousands by the use of *cheap glasses* sufficiently known, then would those who spend endless sums in useless objects of vanity, not grudge a few shillings for the preservation of that most valuable organ, *the eye*, which conduces so much to their welfare and happiness.

Whenever practicable, a personal interview should be had with the optician for the selection of spectacles and eye-glasses, since, in frequent cases, he is enabled to judge better what power to recommend than those who require the use of them. Persons residing in the country or abroad can be suited by reading the four following short paragraphs, and communicating which one in particular refers to their respective visions.

### Myopia, or Short or Near Sights.

This effect is due to the refracting qualities of the transparent media being increased beyond its proportion, or the optic axis being longer than normal; both may be combined, myopia is frequently congenital or acquired.

The usual symptom in simple myopia is, that very near objects—such as the most minute type—are seen clearly, but distant objects are indistinct, misty and surrounded by a haze. Distant small objects, seen distinctly by the normal eye, cannot be seen by the myopic eye at all. Myopia frequently prevails in all the members of a family; over-exertion in reading small type, or continuous stooping at small delicate work, thus accommodating the eye to a very near point, will cause shortsightedness.

*The myopic eye presents usually a peculiar appearance, indicative of its condition; i*

prominent, and even seems to protrude, the pupil is mostly contracted, and in attempting to discern far objects, the habit of constantly nipping the eyelids together is acquired.

By carefully ascertaining the degree of myopia, it is completely remedied by the use of *concave glasses*.

### Hypermetropia or Over Sight.

This defect is caused by the refracting qualities of the transparent media being too low, or the antero-posterior diameter of the eye being shorter than normal, just the reverse of myopia.

The symptom experienced in Hypermetropia is, that after looking intently for a short time on small objects, such as reading, writing, &c., the letters become confused and blurred, and appear to run into each other. Objects at a distance are also indistinct, and the range of vision more limited than normal, although a person fancies to see well at a distance. Strabismus or squinting is frequently associated with Hypermetropia, and the eye is generally smaller and flatter than normal, and the space between and beneath the eyelids does not seem to be filled out. In trying to read a small type, hypermetropic persons will be observed to take the print close to the eye and squeeze the eyelids together; this will frequently be mistaken for myopia.

Hypermetropia is assisted by *convex lenses*, and, if present in an acute degree, convex spectacles should always be worn.

### Astigmatism.

This is a defective condition of the eye, caused by a malformation of the cornea, an abnormal position and unequal curvature of the crystalline lens, the focussing power in the vertical and horizontal meridians of the globe of the eye being unequal. The consequence of this abnormality of vision is, that whilst objects in a horizontal direction are seen with distinctness, those in a vertical direction will appear indistinct and blurred; reading for any length of time becomes troublesome, and generally the eye will suffer from weakness, and is very often mistaken for shortsightedness.

Astigmatism is frequently associated with myopia or presbyopia, and as soon as the foregoing symptoms are evident, no time should be lost in consulting an oculist, as the sight is apt to become even more complicated, which at an early stage may be corrected by the simple adaptation of the proper degree of *cylindrical lenses*.

### Presbyopia or Long Sight.

This vision is consequent to the eye undergoing gradually the natural changes of advanced life, and is seldom experienced before 40 or 45 years of age. The near point recedes, owing to the crystalline lens losing its elasticity, thereby producing a diminution in the accommodative power.

The first symptom of presbyopia is, that small objects, such as the small type of a newspaper, fine needlework, &c., cannot be seen with that distinctness and ease as before, though distant objects can be seen perfectly.

To read small print and to see minute objects distinctly, it has to be removed further and further from the eye, and a strong bright light reflected upon it; the distance being thus rendered too great, they can no longer be seen accurately. This deficiency of accommodative power is rectified by the use of convex lenses.

Besides the affections which are briefly described in the foregoing four paragraphs, there are several others which can be assisted by the use of the appropriate lenses, such as *cataract*, *amblyopia*, *asthenopia*, *strabismus*, *achromatopsia*, &c.; being, however, more or less complicated, and requiring the most careful treatment, it is for the ophthalmic surgeon to determine the proper lens or prism required, which the optician has to construct according to his directions.

## Spectacles.



FIG. 492.



FIG. 490.

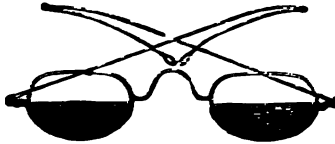


FIG. 496.

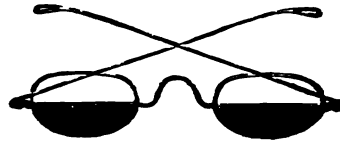


FIG. 494.

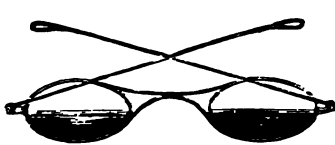


FIG. 498.

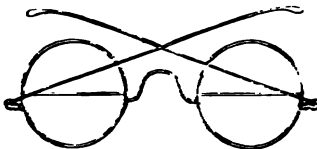
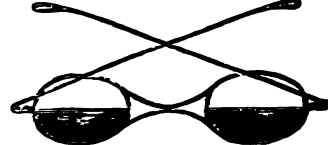


FIG. 501.

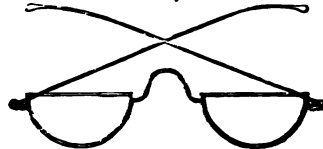


FIG. 500.

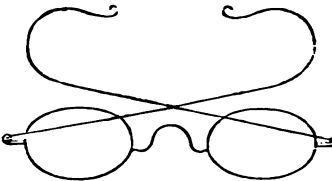


FIG. 502.

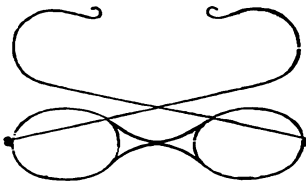


FIG. 503.

## Steel Spectacles.

	£	s.	d.	£	s.	d.
490. A pair best blue or straw coloured steel spectacles, with single sides, concave lenses, and case ( <i>see</i> Engraving)	0	13	6	0	18	6
491. Ditto ditto made extra light	0	16	0	1	1	0
492. A pair best blue or straw coloured steel spectacles, with turnpin sides, concave lenses, in case ( <i>see</i> Engraving)	0	13	6	0	18	6
493. Ditto ditto made extra light	0	16	0	1	1	0
494. A pair best blue or straw coloured steel spectacles, with single sides, convex lenses, and case ( <i>see</i> Engraving)	0	13	6	0	18	6
495. Ditto ditto made extra light	0	16	0	1	1	0
496. A pair best blue or straw coloured steel spectacles, with turnpin sides, convex lenses, and case ( <i>see</i> Engraving)	0	13	6	0	18	6
497. Ditto ditto made extra light	0	16	0	1	1	0
498. A pair best blue or straw coloured steel spectacles, concave or convex lenses, French form ( <i>see</i> Engraving)	0	16	0	1	1	0
499. Ditto ditto made extra light	1	1	0	1	6	0
500. A pair best blue spectacles, with half-eyes, for sketching, &c. ( <i>see</i> Engraving)	0	16	0	1	1	0
501. A pair best steel spectacles, with bi-focal lenses ( <i>see</i> Engraving)	1	1	0	1	11	8

	£	s.	d.	£	s.	d.
Pair best blue or straw coloured steel invisible spectacles, frame grooved into the lenses, sides to hook round the ear, for gentlemen	0	18	6	1	5	0
Ditto ditto French form ( <i>see Engraving</i> )	1	1	0	1	6	0
pair best blue or straw coloured steel invisible spectacles, frame grooved into the lenses, straight sides for ladies	0	18	6	1	5	0
Ditto ditto French form	1	1	0	1	6	0
A pair good strong, second quality, steel spectacles, concave or convex lenses, and case	0	7	6	0	12	6

Good Cheap Spectacles for Hospital use and gifts to poor people.

## Gold Spectacles.

	12 Carat Gold.		15 Carat Gold.		18 Carat Gold.	
	Glass Lenses.	Pebble Lenses.	Glass Lenses.	Pebble Lenses.	Glass Lenses.	Pebble Lenses.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ladies' or gentlemen's, with convex or concave lenses, and case . . . from	2 2 0	2 7 6	2 10 0	2 15 6	3 5 0	3 10 6
Do. do. stout make, from	2 10 0	2 15 6	3 5 0	3 5 6	4 5 0	4 15 6
Ladies' extra light, concave or convex lenses, in case, from	2 0 0	2 5 0	2 10 0	2 15 6	—	—
Do. do. with grooved lenses, invisible from	2 2 0	2 7 6	2 15 0	3 2 6	—	—
Gentlemen's invisible, to hook behind the ear, in case . . . from	2 2 0	2 7 6	2 15 0	3 2 6	—	—
Riding or shooting spectacles, with large eyes, stout make, in case from	3 10 0	3 17 6	4 5 0	4 12 6	—	—

All kinds of Spectacles made to order.

## Eye Protectors.



Figs. 513 to 515.



517.

Fig. 516.

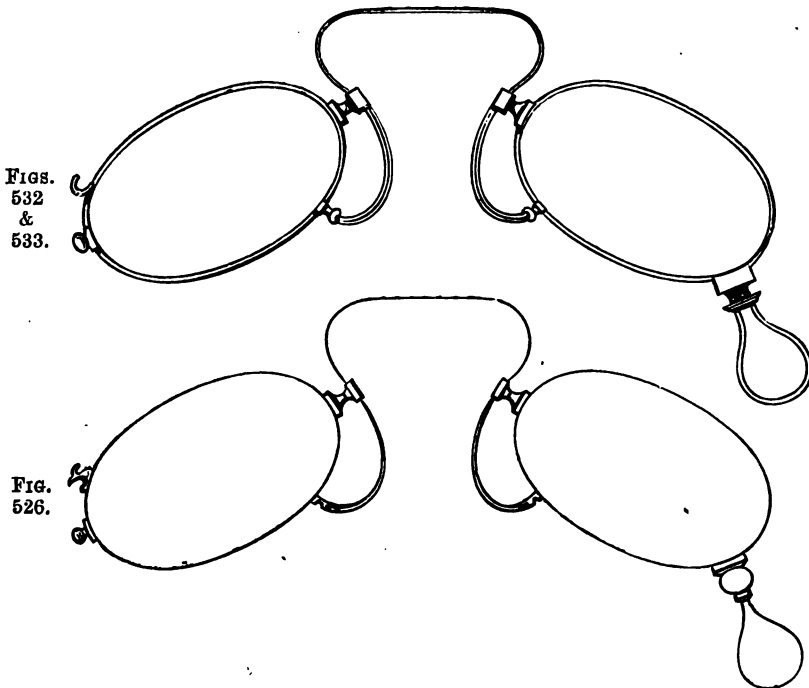


Figs. 518 to 520.

			£	s.	d.
513.	Pillischer's new improved eye protectors, mounted in steel, with neutral tint or cobalt blue glasses, bent to the shape of the eye, in case ( <i>see</i> Engraving) .		1	5	(
514.	Ditto ditto mounted in solid silver . . . . .	from	2	5	(
515.	Ditto ditto " gold . . . . .	"	4	10	(
516.	A pair of best steel goggles, craped cups, neutral tint or cobalt blue glasses, and case ( <i>see</i> Engraving)		1	1	(
517.	A pair of goggles, wire gauze cups, to fit round the ears with elastic band, ( <i>see</i> Engraving)	from 5s. 6d. to	0	10	(
518.	A pair best steel eye protectors, neutral tint or cobalt blue, dome-shape glasses, and case ( <i>see</i> Engraving)		0	15	(
519.	Ditto ditto made extra light, to hook behind the ear . . . . .		1	5	(
520.	Ditto ditto extra light, to hook behind the ear, and solid gold mounting . . . . .	from	2	2	(
521.	A pair good strong steel eye protectors, with neutral tint or cobalt blue glasses, and case, as supplied to the Ophthalmic Hospitals . . . . .		0	10	(
522.	A pair best steel horse-shoe spectacles, with neutral tint or cobalt blue glasses, and case . . . . .	15s. 6d. and	1	1	(
523.	A pair best steel spectacles, with plain neutral tint or cobalt blue glasses . . . . .		0	15	(
524.	Ditto ditto made extra light . . . . .		1	1	(
525.	Eye-shades, made of silk or gauze, various sizes and forms . . . . .	from	0	4	(

All kinds of improved Eye-shades made to order.

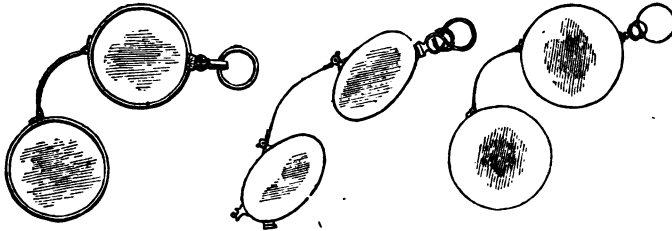
### Double Eye Glasses.



526.	Pillischer's improved best extra light invisible steel double eye glass, convex or concave glasses ( <i>see</i> Engraving)		0	18	(
527.	Ditto ditto second quality . . . . .		0	15	(
528.	Ditto ditto mounted in solid gold . . . . .	from	2	12	(
529.	Ditto ditto best stout steel . . . . .		0	18	(
530.	Ditto ditto second quality ditto . . . . .		0	15	(
531.	Ditto ditto ordinary ditto . . . . .		0	12	(
532.	Ditto ditto mounted in solid tortoiseshell ( <i>see</i> Engraving)		0	18	(
533.	Ditto ditto strained ditto . . . . .		0	12	(
534.	Ditto ditto solid gold . . . . .	from £2. 5s. to	3	10	(
535.	Ditto ditto Standard Hall-marked gold, stout make . . . . .	from £4. 10s. to	6	10	(

Pebble Lenses to any of the above, 5s. extra.

## Double Eye Glasses.



Figs. 540 to 543.

Figs. 538 &amp; 539.

Figs. 536 &amp; 537.

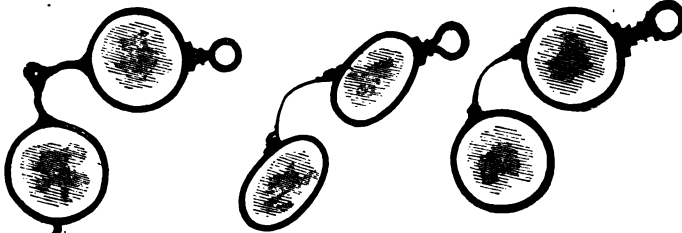


Fig. 548.

Figs. 546 &amp; 547.

Figs. 544 &amp; 545.

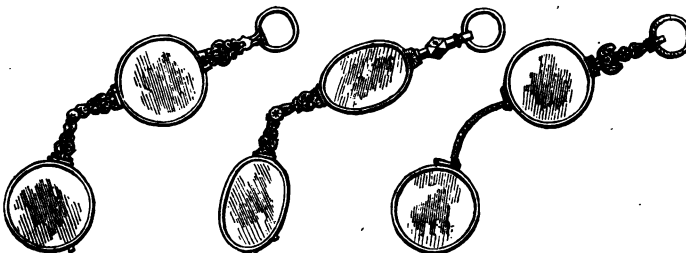


Fig. 553.

Fig. 555.

Fig. 557.

			Glass Lenses.			Pebble Lenses.		
			£	s.	d.	£	s.	d.
Best extra light invisible steel double eye glass, convex or concave lenses, round eyes			0	18	6	1	5	0
Ditto ditto mounted in solid gold		from	2	2	0	2	7	6
Best extra light invisible steel double eye glass, convex or concave lenses, oval eyes			0	18	6	1	5	0
Ditto ditto mounted in solid gold		from	2	2	0	2	7	6
Best stout steel double eye glass, convex or concave lenses, round eyes			0	18	6	1	5	0
Ditto ditto second quality			0	15	6	1	1	0
Ditto ditto mounted in solid gold		from	2	2	0	2	7	6
Ditto ditto ditto Standard Hall-marked			4	10	0	4	15	0
Solid tortoiseshell double eye glass with steel bridge, convex or concave glasses, round eyes			0	15	6	1	1	0
Ditto ditto gold bridge			1	5	0	1	10	0
Ditto ditto oval eyes and steel bridge			0	15	6	1	1	0
Ditto ditto ditto gold "			1	5	0	1	10	0
Solid tortoiseshell double eye glass with spring, convex or concave glasses, round eyes			0	15	6	1	1	0
Ditto ditto without spring			0	12	6	0	17	0
Ditto ditto ditto long pillar handle			0	15	6	1	1	0
A good stout steel double eye glass, convex or concave lenses, oval or round			7s. 6d., 10s. 6d. and	0	12	6		
Ditto ditto in strained tortoiseshell, 7s. 6d., 10s. 6d. and			0	12	6			



## Ladies' Gold Double Eye Glasses.

	12 Carat Gold.	15 Carat Gold.	18 Carat Gold.
	£ s. d.	£ s. d.	£ s.
553. Double action spring, gold double eye glass, convex or concave glasses, round eyes . . . . . from	3 10 0	4 10 0	6 0
554. Ditto ditto without springs . . . . .	3 5 0	4 5 0	5 15
555. Double action spring, gold double eye glass, convex or concave glasses, oval eyes . . . . . from	3 10 0	4 10 0	6 0
556. Ditto ditto without springs . . . . .	3 5 0	4 5 0	5 15
557. Double gold eye glass with solid strong bridge, richly chased and engraved, stout make . . . . . from	4 10 0	6 0 0	7 10

Pebble Lenses to any of the above, 5s. extra.

The above Prices are subject to variation.

## Ladies' Hand Eye Glasses in Solid Gold, Tortoiseshell, &amp;c.,

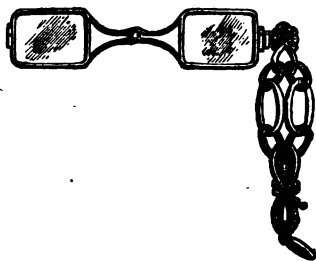


FIG. 558.

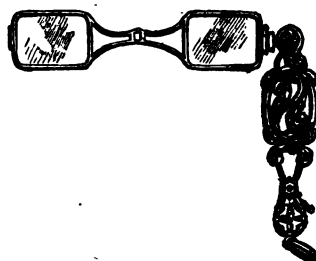


FIG. 559.

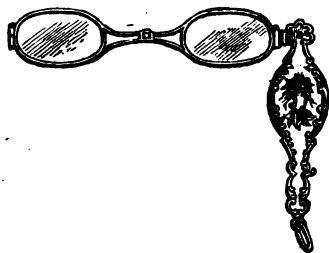


FIG. 560.

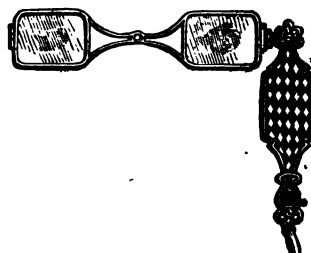


FIG. 561.

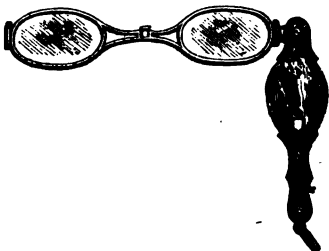


FIG. 562.

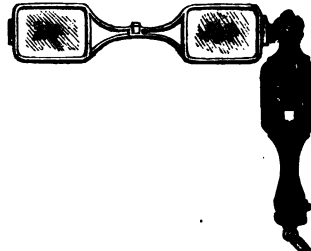


FIG. 563.

558. Solid standard gold eye glass, convex or concave glasses . . . . . from	6 10
559. Ditto ditto very handsomely engraved . . . . .	8 0
560. Ditto ditto richly chased or engraved, very superior, from	£10. 10s. to 15
561. Ditto ditto ditto and enamelled, . . . . .	16
562. Ditto ditto cases of solid tortoiseshell . . . . .	5
563. Ditto ditto ditto and thoroughly lined with gold plate, from	7

				£	s	d.
silver gilt eye glass, convex or concave glasses, any of the above patterns, from				2	2	0
ditto best double gilt	.	.	.	3	10	0
ditto tortoiseshell and gilt	.	.	.	1	1	0
ditto best double gilt	.	.	.	2	0	0

Pebble Lenses to any of the above, 5s. extra.

at Variety of New and Handsome Patterns being always added and kept in stock, or made to order.

## Single Eye Glasses.



FIG. 568.



FIG. 569.

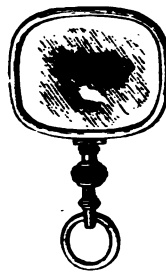


FIG. 570.

FIG. 571.

FIG. 574.

FIG. 572.

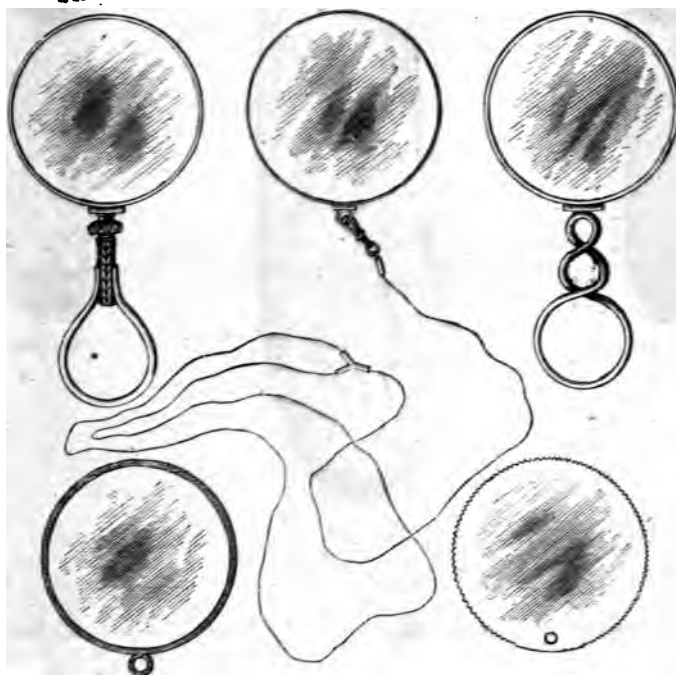


FIG. 577.

FIG. 578.

single gold eye glass, engraved handle, oval eyes	.	.	.	from	1	5	0
Ditto ditto ditto round eyes	.	.	.	"	1	5	0
Ditto ditto ditto square eyes	.	.	.	"	1	7	6
Ditto ditto ditto superior eyes	.	.	.	"	2	10	0
Ditto ditto quite plain ditto	.	.	.	"	1	1	0
Ditto gilt ditto various patterns	.	.	.	from 15s. to	1	5	0
Ditto gold ditto Oxford rim, invisible, and glass lens	.	.	.	10s. 6d. and	0	12	6
Ditto ditto ditto ditto and pebble lens	.	.	.	.	0	15	0
Ditto ditto ditto stout make	.	.	.	from	0	10	6
Ditto tortoiseshell	.	.	.	.	0	2	
Ditto all glass	.	.	.	.	0	2	

### Chatelaine Spectacle Cases.



FIG. 580.



FIG. 584.



FIG. 585.

							£	s.
579.	Plain morocco leather, steel mounting	.	.	.	.	from	0	4
580.	Ditto russia ditto ditto	.	.	.	.	"	0	8
581.	Best ditto ditto ditto	.	.	.	.	"	0	17
582.	Plain velvet and gilt on silver oxidised	.	.	.	.	"	0	8
583.	Best silk velvet in superior mountings	.	.	.	.	"	0	14
584.	Ormolu on oxidized silver, elaborately chased or engraved	.	.	.	.	"	1	10
585.	Best silk velvet with most elaborately executed gilt on oxidized silver fretwork	.	.	.	.	from	1	5

Chatelaine Cases, suitable for spectacles and eye glasses, mounted in solid silver and gold, ormolu and oxidized silver, made to order to any drawing or design.

## Ophthalmic Instruments.



FIG. 586.



FIG. 607.

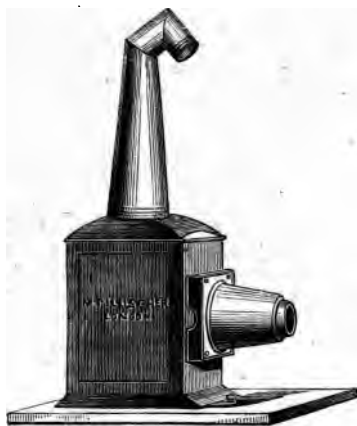
	£	s.	d.
1. Ophthalmoscope, after Liebreich, complete in case (see Engraving)	0	15	6
2. Ditto " Zehender ditto	1	1	0
3. Ditto " Coccius ditto	0	18	6
4. Pillischer's Improved Binocular Ophthalmoscope	3	3	0
5. Improved Pocket Ophthalmoscopes	10s. 6d. to	0	18 6
6. Liebreich's Improved Demonstrating Ophthalmoscope	7	10	0
7. Donder's ditto ditto, with micrometer	10	10	0
8. Teulon's ditto ditto	3	5	0
9. Trial case, containing complete sets of bi-convex and bi-concave glasses, a set of prisms from 3 to 24 degrees, various shades of cobalt blue glasses, and a spectacle frame, the whole arranged in mahogany case, with lock and key	5	0	0
10. Trial case similar to the above, without the prisms	4	5	0
11. Prisms from 20 to 24 degrees, in morocco case	1	7	6
12. Trial case, containing double set of bi-convex and bi-concave cylindrical glass for astigmatism, spectacle frame, the whole arranged in mahogany case, with lock and key	5	5	0
13. Ditto ditto with single set of glasses	4	0	0
14. Pillischer's improved trial case containing a complete set of concave and convex spherical, and a set of plano concave and convex cylindrical lenses; a set of prisms from 3 degrees to 24 degrees, a stenopæic apparatus, an improved spectacle frame, specially constructed to facilitate the revolving of cylindrical lenses for astigmatic patients; the whole packed and arranged in a mahogany case with lock and key	9	10	0
15. Pillischer's new improved trial frame to receive spherical and cylindrical lenses	0	17	6
16. Ditto ditto gilt, with divided arcs	1	7	6
17. Stenopæic apparatus (after Donder's)	0	12	6
18. Heurteloup's artificial leeches with two suckers, complete in case	1	5	6
19. Ditto with one sucker	1	1	0
20. Improved Eye-Douche	8s. 6d. to	0	12 6
21. Pillischer's improved Syphon Eye-douche	0	10	6
22. Ditto ditto Spray (see Engraving)	12s. 6d. to	0	14 6
23. Snellen's test-types	0	4	6
24. Jaeger's	0	2	6
25. Foster's cones in sets, from 8-inch to 1-inch focus for ophthalmic surgeons, or single	0	15	6

# **MAGIC LANTERNS**

AND

# **DISSOLVING VIEW APPARATUS.**

## The Magic Lantern.



Figs. 612 to 617.

The Magic Lantern, invented about the year 1650 by Athanasius Kircher, is constructed on similar principles to the solar microscope, and consists, in its simplest form, of a condensing lens and an object or focussing lens, mounted in a tin box. A lamp supplied with a reflector is placed inside the tin box, the light of which passes in a condensed state through a picture painted in transparent colours, and is thrown, in the shape of an enlarged image, on a wall or screen.

For a long period the magic lantern served principally as an optical toy to amuse children, and was the favourite instrument used by many charlatans and would-be wizards to perform their pretended supernatural wonders, and, by its means, to impose upon the good nature of the ignorant and uneducated people.

Recent improvements, however, have raised the magic lantern to the highest position as a scientific instrument, and is now with great advantage employed as a popular medium, not only to afford rational amusement for the young, but also to enlighten and instruct the old, and to illustrate almost every branch of scientific information.

## Single Lanterns.

Each of the following Lanterns includes a box of 12 slides, comprising natural history, nursery tales, views, landscapes and numerous comic subjects:—

				£	s.	d.
11.	No. 1.	Lantern with sliding adjustment, oil lamp and silvered reflector,				
		12 painted slides, containing about 36 to 48 different objects	.	0	7	6
12.	No. 2.	Ditto ditto ditto	.	0	10	6
13.	No. 3.	Ditto ditto ditto	.	1	4	0
14.	No. 4.	Ditto ditto ditto	.	1	10	0
15.	No. 5.	Ditto ditto ditto	.	1	15	0
16.	No. 6.	Ditto ditto ditto	.	2	10	0
17.	No. 7.	Ditto ditto ditto	.	3	0	0
18.	Best solar or fountain lamps for oil	.	.	from 12s. 6d. to	0	18 6
19.	" camphorated oil	.	.	per can, 2s. 6d., 5s., 7s. 6d. and	0	10 0
20.	" chimneys	.	.	each, 6d. and	0	1 0
21.	" cottons	.	.	per dozen, 6d. and	0	1 0



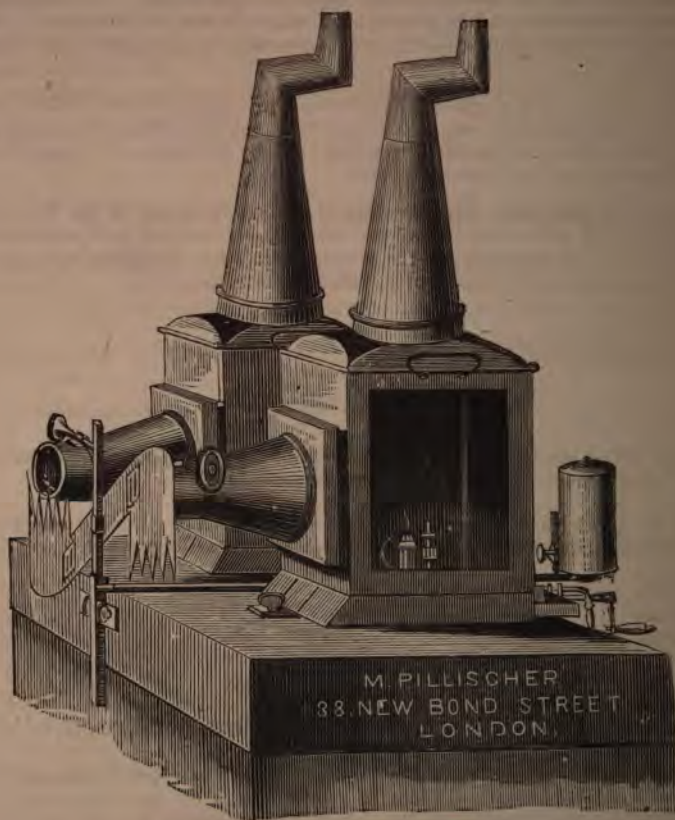
## Best Single Phantasmagoria Lanterns.

622. 3-inch Phantasmagoria Lantern, with double combination condensing lenses, front lens to adjust by rack and pinion movement, best solar lamp and silvered reflector, the whole fitted in a strong deal box					£ 2 18 0
623. 3½-inch ditto	ditto	ditto	.	.	3 10 0
624. 4-inch ditto	ditto	ditto	.	.	4 10 0
625. 4½-inch ditto	ditto	ditto	.	.	5 10 0

The Oxy-Calcium or Hydro-Oxygen light can be fitted to any of the above Lanterns from £6. 10s. to £8. 10s.

M. PILLISCHER begs most respectfully to draw attention to the above improved Lanterns. They are of the very best construction, can be used with the greatest facility, and give a perfectly defined figure and well-illuminated field of view on a disc from about eight to sixteen feet diameter. He can most confidently recommend them for the use of schools, mechanics' institutions, &c., &c., as a very pleasing and suitable mode to impart instruction and amusement, as well as aiding in general the progress of education.

## Pillischer's Improved Apparatus for the Exhibition of Dissolving Views.



Figs. 626 to 629.



The beautiful and interesting effects called "Dissolving Views" are produced by the employment of two lanterns placed side by side, and arranged so that their axis may be made to converge and produce coincident luminous discs on a screen; they should be firmly screwed to a board, or to the top of the box into which they are fitted, as shown in the drawing.

For producing the dissolving effect, the apparatus required consists of two toothed combs or fans, which are attached to a rack and pinion adjustment, worked up and down by a winch handle; and whilst one of the lanterns is completely opened, to allow the picture by it to fall on the screen, the other is completely closed. When a change is desired, the turning of the handle moves the fan, and admits a part of the picture, which, before, was obscured, to emerge gradually on the screen, whilst the part previously exhibited is effaced.

The effect produced by two pictures of quite different characters merging so gradually one into another, as to make it impossible for the eye to detect the change until it has actually taken place, is so singularly beautiful, that it renders the dissolving views a most pleasing and marvellous exhibition.

It is of utmost importance that the pictures used for this purpose should be painted with extreme care and well finished to the smallest minutiae, since, through the enormous magnifying power employed, they would lose much of their proper effect.

The best subjects and those mostly used are views, landscapes, groups, interiors and exteriors of churches, palaces and various public buildings, continuous or connected series of slides, illustrating amusing tales, such as Aladdin and his Wonderful Lamp, Blue Beard, Cinderella, Puss in Boots, Whittington and his Cat, &c., &c.; those, however, best known by the name of mechanical effects, such as "A Fleet of Ships at Sea and Waves in Motion, A Lighthouse by Day and Night in Storm or Lightning, The Soldier's Dream," &c., are by far the most effective.

Discretion and good taste should always be exercised in selecting appropriate subjects for dissolving one picture into another, in order to avoid such combinations as Jacob's Dream and Cobbler at Work, &c., from the sublime to the ridiculous.

To produce good results with the dissolving view apparatus, it is essential that the condensers and reflectors should be scrupulously clean and bright, and above all to have a good light; if oil is used, it should be the best sperm and camphorated; to obtain a more brilliant light, either the oxy-calcium or hydro-oxygen light can be adopted, both of which, if prepared and used with ordinary care, are perfectly safe and easy to manage.

## Improved Dissolving View Apparatus.

Consisting of a pair best phantasmagoria lanterns, rack and pinion adjustment to the front focussing lenses, dissolver, silvered reflector and a pair of best solar lamps, for (camphorated) oil, the whole packed and fitted in a strong box, with lock and key.

### JAPANNED TIN.

626. 3-inch Condensing lenses	£7 10 0
627. 3½ " ditto	8 10 0
628. 4 " ditto	11 10 0
629. 4½ " ditto	13 10 0

### POLISHED MAHOGANY.

LINED WITH METAL.

630. 3-inch Condensing lenses	£9 0 0
631. 3½ " ditto	10 10 0
632. 4 " ditto	12 0 0
633. 4½ " ditto	15 10 0

Larger Apparatus made to order.

The oxy-calcium or hydro-oxygen light fitted to any of the above lanterns.

634. Oxy-calcium	from 6 0 0
635. Hydro-oxygen	8 10 0

## Pillischer's Improved Binocular Lantern.

These lanterns are constructed with the greatest possible care, the lenses are worked with almost mathematical truth, and the mechanical part is on the most simple and efficacious principle; they are specially adapted for the lecture-room or public institutions, and guaranteed to withstand the effects of extreme climates.

### Improved Binocular Lantern.

The body is made of solid mahogany, lined throughout with strong sheet-iron, rack pinion adjustment to focussing lenses, M. Pillischer's new dissolver, complete sets of apparatus for making, and lamps for the use of the hydro-oxygen light, and clock-work mechanism for turning the lime cylinders; the whole packed in a strong box with lock and key.

636. 3½-inch condensing lenses	£	30	10
637. 4½-inch ditto	£	35	10

The above Lanterns without clockwork and apparatus for making the hydro-oxygen gas, £10 less.

Larger Apparatus made to order.

### Various Accessories required for the Hydro-Oxygen and Oxycalcium Lights.

638. Oxycalcium Lamp. Fig. 638.	£	0	16
639. Improved Safety Hydro-Oxygen Jet. Fig. 639	£	1	10
640. Improved Safety Jet for burning (carburetted hydrogen) ordinary coal gas with oxygen gas. Fig. 640	£	0	18
641. Lenden Generator for making hydrogen gas	£	1	5
642. Iron Retort for making oxygen gas	£	0	15
643. Copper Retort for making oxygen gas	£	0	18
644. Zinc Purifier	£	0	4
645. Hard Lime Cylinders	per doz.	0	4
646. Soft Lime Cylinders	per doz.	0	4
647. Oxygen Mixture	per lb.	0	5
648. Chlorate of Potash	per lb.	0	5
649. Oxide of Manganese	per lb.	0	6
650. Granulated Zinc	per lb.	0	5
651. Sulphuric Acid	per lb.	0	6

### Scientific Instruments adapted to Lanterns.

652. Achromatic Microscope of great magnifying power, with rack adjustment	from	2	10
653. Micro objects in mahogany frames	per doz.	1	4
654. Glass trough for microscope	each from	0	5
655. "Polariscope" with rack adjustment, in case	from	7	10
656. Various objects for ditto	from	0	4
657. "Kaleidoscope" in mahogany case	from	2	0
658. Slide for ditto	from	0	7
659. "Aphengescope," an instrument for exhibiting opaque objects, cartes de visite, &c., by the lantern	from	0	18
660. Ditto ditto superior, arranged for a pair of gas lanterns	from	2	5

The Aphengescope can be applied to any lantern, no alteration being necessary.

661. Clock to turn lime cylinders	£	3	10
-----------------------------------	---	---	----

### Portable Frames and Screens, packed in box, for the Magic Lantern.

662. 6 feet square	£	1	15
663. 8 "	£	2	10
664. 10 "	£	3	10
665. 12 "	£	4	10
666. 20 "	£	7	10
667. 30 "	£	11	10

## The Oxycalcium Light.



FIG. 638.



FIG. 640.

The Oxycalcium Light is a very brilliant and most convenient mode of illumination for the magic lantern, and emanates from a cylinder of lime being rendered white-hot by projecting a stream of oxygen gas through the flame of a spirit lamp, as shown in Fig. 638.

A vertical cylindrical chamber contains the spirit which passes through an elongated tube to the cotton-holder attached to it. Immediately behind the cotton-holder is placed a suitable support for the lime cylinder, in front of which the curved jet emits a stream of oxygen gas, passing through the flame of the spirit upon the lime cylinder. The other end of the curved jet is of course to be connected with the bag containing the oxygen gas. Care should be taken in letting only a gentle stream of gas play at the commencement on the lime cylinder, so as to get it gradually warm; by overheating it at first, it is apt to crack and fall to pieces, also to turn it round very frequently.

A very convenient form of oxycalcium gas jet will be found in Fig. 640, being constructed to burn (carburetted hydrogen) ordinary coal gas in conjunction with oxygen; in fact, it is a modification on the hydro-oxygen light, and only somewhat inferior to it in its intensity. In any locality where the ordinary gas is laid on, a flexible Indian-rubber tube is attached to the most convenient burner, and applied instead of the spirit, as described in the arrangement with the lamp—Fig. 638.

## The Hydro-Oxygen Light.

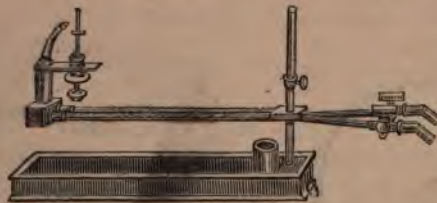


FIG. 639.

The Hydro-Oxygen Light is produced by the combustion of a mixture of two gases, Hydrogen and Oxygen, forced with great energy through a fine jet of a specially constructed lamp, as represented in Fig. 639, and made to impinge on a cylinder of lime, which becomes highly incandescent, and produces a light of the most intense brilliancy, rivalling almost that of the electric light, and possessing the same properties for the advantageous exhibition of colours as the solar light.



## How to make Oxygen Gas.

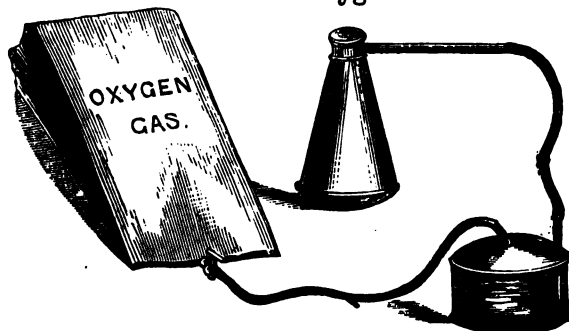


FIG. I.

## APPARATUS FOR MAKING THE OXYGEN GAS.

The arrangement of the apparatus for making oxygen gas is represented in Fig. I.

Unscrew the top of the *oxygen retort* and charge it with about two pounds of oxygen-mixture (composed of four parts of chlorate of potash in crystals, and one part black oxide of manganese), carefully wipe the neck of the retort of all particles of the mixture, in order to prevent any escape of gas, then screw the top on again tightly.

This being done and the connections made with the purifier, the retort is placed on a moderate fire. After a few minutes, bubbles of gas mixed with air will be heard to pass through the tube into the purifier, ascend through the water, and escape by that part of the tube to which the gas-bag is attached. This escape must be allowed to continue for about two or three minutes, to expel the air contained in the retort and purifier. Now attach the bag, previously opening the stopcock; the gas will enter the bag with great rapidity and fill it in a very short time. As soon as sufficient gas has been collected, the retort should be detached from the purifier, and then the stopcock of the gas-bag turned off; disconnect the bag from the purifier, when it will be ready for use with the lantern.

The retort containing the exhausted oxygen mixture should now be removed from the fire, allowed to cool, and well washed out with hot water; when perfectly dry, it can be put by, and will be ready for use on the next occasion.

The gas-bags being subject to get hard and stiff, previous to using them, should be suspended in a warm place for several hours, so as to make them soft and pliable. In order to expel the air from a bag before filling it with gas, open the stopcock, roll it up as tightly as possible, beginning at the opposite end to which the stopcock is fixed, and quickly close the stopcock.

## How to make Hydrogen Gas.

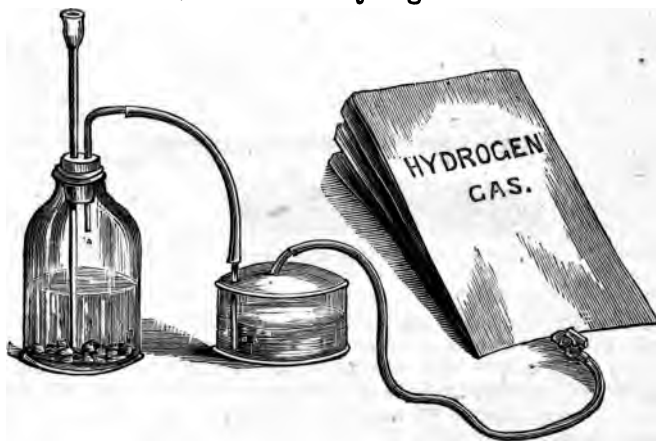


FIG. II.

## APPARATUS FOR MAKING THE HYDROGEN GAS.

The arrangement of the apparatus for making hydrogen gas is represented in Fig. II.

Charge the gas-bottle about half full with zinc cuttings or granulated zinc; half fill the

purifier with water, and connect the bottle with the purifier. Make a mixture of one part of strong sulphuric acid and seven parts of water, and pour about half a pint of this mixture into the gas-bottle through the small funnel; immediately hydrogen gas will be liberated, which passes through the purifier and escapes by the tube to which the gas-bag is to be attached. Allow this escape to continue for three or four minutes in order to expel all atmospheric air, then connect the gas-bag, having previously opened the stopcock.

The rapidity with which gas evolves is easily judged by the noise of the bubbling in the water of the purifier; add small quantities of acid mixture, from time to time, till the bag is filled; now disconnect the gas-bottle from the purifier, and close the stopcock of the gas-bag, empty all the fluid from the bottle, and rinse it well out with water; the remaining zinc particles may be saved for next use.

In any locality where gas is laid on, the hydrogen gas-bag may be filled with it, thus saving the trouble to make it as described above.

It is advisable that the sulphuric acid should be diluted two or three hours previous to making the hydrogen gas. Considerable heat being evolved through the process of mixing, it should, for this reason, be made beforehand, so as to allow sufficient time for it to become quite cool before adding it to the zinc in the generator. An earthenware vessel is most suitable for making the mixture.

### How to Use the Two Gases.



FIG. III.

IMPROVED PRESSURE BOARD, SHOWING THE ARRANGEMENT OF THE TWO GAS-BAGS.  
See FIG. III.

Having described how to make the two gases, the next thing to know is how to light it. Prior to doing this, the gas-bags must be placed between the pressure board, as shown in the above illustration, Fig. III., which represents an improved pressure board for two gases, and is exceedingly convenient for using the hydro-oxygen light. It possesses the advantage of giving more equality of pressure, requiring only half the weights and occupying a much smaller space. Having properly placed the gas-bags, connect them carefully by means of the tubing to the lanterns. Partially open the stopcock of the hydrogen gas, ignite it and allow the flame to play on the lime cylinder till it gets red hot; now open the stopcock of the oxygen, and admit a small stream of gas. This must be done gradually, as a great force would be apt to extinguish the light. The two stopcocks should be taken one in each hand, and the projection of the gases upon the lime cylinder regulated until the most intensely brilliant light is obtained.

The exhibition being finished and the light required to be extinguished, the hydrogen stopcock should be turned off first and then that of the oxygen; the weights and pressure board may now be removed and all other disconnections made, but they must never be interfered with or disturbed whilst the gases are burning. By carrying out the foregoing instructions, the result of obtaining the most brilliant light will be easily accomplished.

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| looked on Peter              | bekah                              | 1893. Trial of Peter's Faith       |
| Christ scourged              | 1856. Joseph sold by his Brethren  | 1894. Children brought to Jesus    |
| The Crucifixion              | 1857. Joseph's Coat shown to       | 1895. The Woman touching the       |
| Christ appearing to Mary     | Jacob                              | Hem of Christ's Garment            |
| Peter and the Eleven.        | 1858. Joseph interpreting Pha-     | 1896. Angels ministering to Christ |
| Peter and John at the        | raoh's Dream                       | 1897. Repentance of Judas          |
| Beautiful Gate               | 1859. Meeting of Joseph and        | 1898. The Crown of Thorns          |
| Moses at the Well            | Jacob                              | 1899. Peter denying Christ         |
| Moses striking the Rock      | 1860. Moses in the Bullrushes      | 1900. Christ's Descent from the    |
| Offering Sacrifice           | 1861. Pharaoh's Daughter finds     | Cross                              |
| Jael and Sisera              | Moses                              | 1901. The Entombment of Christ     |
| Jephthah's Rash Vow          | 1862. Miriam                       | 1902. The Resurrection             |
| Samson and the Foxes         | 1863. Israelites gathering Manna   | 1903. The Marys at the Sepulchre   |
| Samson and Delilah           | 1864. Israelites worshipping the   | 1904. The Disciples at Emmaus      |
| Ruth and Naomi               | Golden Calf                        | 1905. The Draught of Fishes        |
| Ruth Gleaning                | 1865. Adoration of the Shepherds   | 1906. Peter's first Sermon         |
| Elijah taken up to Heaven    | 1866. The Presentation in the      | 1907. The Death of Abel            |
| David with the Head of       | Temple                             | 1908. The Ark                      |
| the Philistine               | 1867. The Wise Men's Offering      | 1909. Noah leaving the Ark         |
| The Fall of Dagon            | 1869. Massacre of the Innocents    | 1910. Abraham and Lot separating   |
| Samuel and Eli               | 1870. Christ disputing with the    | 1911. Hagar in the Wilderness      |
| David playing before Saul    | Doctors                            | 1912. Hagar finding Water          |
| David and Abigail            | 1871. John baptising in the River  | 1913. Departure of Rebecca         |
| Nathan's Parable             | Jordan                             | 1914. Isaac blessing Jacob         |
| Queen of Sheba visits So-    | 1872. St. John preaching in the    | 1915. Jacob's Vision               |
| lomon                        | Wilderness                         | 1916. Jacob's Meeting with Rachael |
| Judgment of Solomon          | 1873. Christ calling Simon and     | 1917. Cup in Benjamin's Sack       |
| Esther and Ahasuerus         | Andrew                             | 1918. Joseph bringing Jacob        |
| Triumph of Mordecai          | 1874. John baptising Christ        | before Pharaoh                     |
| Daniel in the Lion's Den     | 1875. John reproving Herod         | 1919. Jacob blessing Joseph's Sons |
| Captive Israelites           | 1876. Miraculous Draught of        | 1920. Pharaoh and his Host         |
| Jonah cast into the Sea      | Fishes                             | overthrown                         |

- |                                   |   |  |
|-----------------------------------|---|--|
| 1921. Moses with the Commandments | 1927. Balaam and his Ass                  | 1933. Esther fainting before Ahasuerus             |
| 1922. Moses and Brazen Serpent    | 1928. Manoah's Sacrifice                  | 1934. Ahasuerus placing the Crown on Esther's Head |
| 1923. Moses' Hands stayed up      | 1929. The Infant Samuel                   | 1935. Daniel's Vision                              |
| 1924. Elijah resuscitating Child  | 1930. David and Goliath                   | 1936. Destruction of Babylon                       |
| 1925. Elijah making Iron to swim  | 1931. Nathan and David                    |  |
| 1926. The Disobedient Prophet     | 1932. Presents of Gold brought to Solomon |  |

### Photographic Views in China.

4s. 6d. and 7s. 6d. each.

- |   |   |  |
|---|---|--|
| 1937. Raree Show at Lin-sin-Choo  | 1941. The Ou-ma-too, or Five Horses' Heads          | 1945. Harbour of Hong-Kong                       |
| 1938. Temple of Buddha, Canton  | 1942. The Tung-ting Shan                            | 1946. Se-tsean-shan, or the Western Sacred Hills |
| 1939. Lake See-Hoo and Temple of the Thundering Winds, from the Vale of Tombs | 1943. Apartments in a Mandarin's House, near Nankin | 1947. Feeding Silk-worms and sorting Cocoons     |
| 1940. Façade of the Great Temple of Macao                                     | 1944. Cat Merchants and Tea Dealers at Tong-Chow    | 1948. Punishment of the Bastinado                |

### Photographic Views, Various.

3s. 6d. and 5s. 6d. each.

- |   |   |                               |
|---|---|-------------------------------|
| 1949. Canterbury Cathedral (Warrior's Chapel) | 1952. Winchester Cathedral              | 1955. Bay on Loch Katrine     |
| 1950. Lichfield Cathedral (Aisle)             | 1953. „ (Bp. Fox's Shrine)              | 1956. Balmoral, from the East |
| 1951. Winchester Cathedral (Nave)             | 1954. Falls of Braan at Rumbling Bridge | 1957. „ from the Dee          |
|   |   | 1958. Canterbury Cathedral    |
|   |   | 1959. „ „ the Choir           |

### Various Objects for the Lantern Microscope.

Mounted in Mahogany Frames, per dozen, 24s.

- |                              |                            |                                   |
|------------------------------|----------------------------|-----------------------------------|
| <b>DISSECTED INSECTS.</b>    | 1993. Louse                | 2020. Spiracles of Dytiscus       |
| 1961. Proboscis of Blow Fly  | 1994. „ (Pig)              | 2021. Feathers of Humming Bird    |
| 1962. Proboscis of Drone Fly | 1995. „ (Dog)              | 2022. Section of Human Hair       |
| 1963. Proboscis of Hive Bee  | 1996. „ (Horse)            | 2023. Spores of Fern              |
| 1964. Skin of Butterfly      | 1997. Sheep Tick           | 2024. Aristolochia                |
| 1965. Wings of Flies         |                            | 2025. Rhinoceros Horn (P)         |
| 1966. Spiracles of Beetles   | <b>BONES OF</b>            | 2026. Palate of Whelk (P)         |
| 1967. Tongue of Drone Fly    | 1998. Man                  | 2027. A Frog                      |
| 1968. Tail of Shrimp         | 1999. Mummy                | 2028. A Toad                      |
| 1969. Mouth of Beetle        | 2000. Tiger, &c.           | 2029. Mouth of Tadpole            |
| 1970. Trachea of Beetle      | <b>FOSSIL BONES OF</b>     | 2030. Fern                        |
| 1971. Tongue of Bee          | 2001. Elephant             | 2031. Skin of Fish                |
| 1972. Entire Kidney of Sheep | 2002. Rhinoceros           | 2032. Garden Ant                  |
| 1973. Lung of Beetle.        | 2003. Whale, &c.           | 2033. Water Beetle                |
| 1974. Paddle of Boat Fly     | <b>TEETH OF</b>            | 2034. Dog's Flea.                 |
| <b>INSECTS.</b>              | 2004. Man                  | 2035. Antennæ of Cockchafer       |
| 1975. Water Spider           | 2005. Ox                   | 2036. Wings of Bee                |
| 1976. Garden Spider          | 2006. Deer                 | 2037. Scales of Death's Head Moth |
| 1977. Cockroach              | 2007. Shark, &c.           | 2038. Coal                        |
| 1978. Rove Beetle            | <b>TANNED SKINS OF</b>     | 2039. Coral                       |
| 1979. Saw Fly                | 2008. Alligator            | 2040. Limestone                   |
| 1980. Lady Bird              | 2009. Elephant             | 2041. Lace                        |
| 1981. Ichneumon Fly          | 2010. Ox                   | 2042. Silk                        |
| 1982. Dirt Mite              | 2011. Man                  | 2043. Muslin                      |
| 1983. Dung Fly               | <b>SECTIONS OF WOODS.</b>  | 2044. Scales of Perch             |
| 1984. Scorpion Fly           | 2012. Clematis             | 2045. Lung of Whale               |
| 1985. House Fly              | 2013. Mahogany             | 2046. Human Lung                  |
| 1986. Blow Fly               | 2014. Willow               | 2047. Epidermis of Crab           |
| 1987. Earwig                 | <b>SALTS.</b>              | 2048. Wing of Butterfly           |
| 1988. Boat Fly               | 2015. Bichromate of Potash | 2049. Feather of Ibis             |
| 1989. Marsh Fly              | 2016. Sulphate of Copper   | 2050. Petal of Geranium           |
| 1990. Crane Fly              | 2017. Murexide             | 2051. Seaweed                     |
| <b>PARASITIC INSECTS.</b>    | <b>VARIOUS.</b>            | 2052. Skin of Caterpillar         |
| 1991. Flea                   | 2018. Wing of May Fly      |                                   |
| 1992. Bug                    | 2019. Gizzard of Cricket   |                                   |

**All kinds of Photographs Coloured in a Superior Style.**

Fairy Tales, Scriptural, Historical, Natural History, and any other Subjects, Painted to Order

SURVEYING, MATHEMATICAL,

AND

PHILOSOPHICAL INSTRUMENTS.

## Surveying Instruments.

M. PILLISCHER begs leave to call the attention of Engineers, Architects, &c., Instruments comprised in the following list; they are constructed on the most improved principles, and with sufficient strength to withstand the rough usage to which they are frequently exposed.

### Theodolites.

				£
2053.	5-inch	Everest's Theodolite, of the best construction, circles divided on silver, reading with verniers to 30 seconds, tangent screw motions, fitted in mahogany case, strong tripod stand		23
2054.	6-inch	ditto ditto	reading to 20 seconds	28
2055.	7-inch	ditto ditto	" 10 "	36
2056.	5-inch	Transit Theodolite, of the best and improved construction, circles divided on silver, reading with verniers to 30 seconds, tangent screw motions, fitted in mahogany case; strong tripod stand		26
2057.	6-inch	ditto ditto	reading to 20 seconds	34
2058.	7-inch	ditto ditto	" 10 "	42
2059.	8-inch	ditto ditto	" " "	52
2060.	5-inch	usual plain Theodolite, of best make, circles divided on silver, reading with verniers to 30 seconds, tangent screw motions, fitted in mahogany case; strong tripod stand		22
2061.	6-inch	ditto ditto	reading to 20 seconds	27
2062.	7-inch	ditto ditto	" 10 "	34

Larger Instruments made to order.

All kinds of Theodolites carefully repaired, cleaned and adjusted by experienced workmen on the shortest notice.

### Levels.

2063.	14-inch	Dumpy Level of best make, two eye-pieces, divided silver compass-ring fitted in mahogany case; strong tripod stand		16
2064.	12-inch	ditto ditto		14
2065.	10-inch	ditto ditto		12
2066.	14-inch	Y Level of best make, two eye-pieces, divided compass-ring fitted in mahogany case; strong tripod stand		16
2067.	12-inch	ditto ditto	ditto	14
2068.	10-inch	ditto ditto	ditto	12
** Any of the above Levels £1. 10s. less without compass.				
2069.	Drainage or Agricultural Level, with Telescope, tripod stand and station-staff, complete			5
2070.	Ditto	ditto	plain, for Builders	3
2071.	4-inch	Brass Pocket Level, in case		0
2072.	6-inch	ditto ditto		0
2073.	8-inch	ditto ditto		0
2074.	10-inch	ditto ditto		0
2075.	12-inch	ditto ditto		1
2076.	6-inch	Spirit Level, in rosewood block, with brass plate		0
2077.	8-inch	ditto	ditto	0
2078.	10-inch	ditto	ditto	0
2079.	12-inch	ditto	ditto	0

All kinds of Levels carefully repaired, cleaned and adjusted by experienced workmen on the shortest notice.

### Levelling Staves.

Divided to English or any Foreign Scale.

			£	s.	d.
. Sopwith's Levelling Staff, best make, 16 feet, painted	.	.	3	5	0
. Ditto ditto second quality, 16 "	.	.	3	0	0
. Ditto ditto ditto 14 "	.	.	2	15	0
. Folding Staff, plain, 10 feet	.	.	1	5	0
. Ditto " 8 "	.	.	1	2	6

### Circumferenters, or Miners' Dials.

. 4-inch Circumferenter, with folding sights, fitted in mahogany case ; jointed oak or mahogany stand	.	.	5	15	0
. 5-inch ditto ditto	.	.	7	15	0
. 5-inch improved Mining Circumferenter, with telescope and separate vertical circle, cross levels, folding sights, fitted in mahogany case ; jointed legs	.	.	16	10	0
. 6-inch ditto ditto	.	.	18	0	0

### Clinometers.

. Clinometer, watch form, as used by the Members of the Royal Geological Society, best make, in morocco case	.	.	2	2	0
. Ditto 2½ diameter, with sight	.	.	1	7	6
. Clinometer Rule, with compass, in case	.	.	1	7	6
. Ditto ditto ditto with sights and levels	.	.	2	10	0
. Ditto ditto ditto with graduated arc and vernier for taking the readings	.	.	3	5	0

### Cross Staves, Optical Squares, &c.

. Surveyor's Cross-Staff Head, brass octagonal, in case	12s. 6d. and	0	15	6
. Ditto ditto with graduated circle, movable head and compass	.	2	5	0
. Optical Square, with adjustment, in leather case with sling	.	1	10	0

### Land Chains.

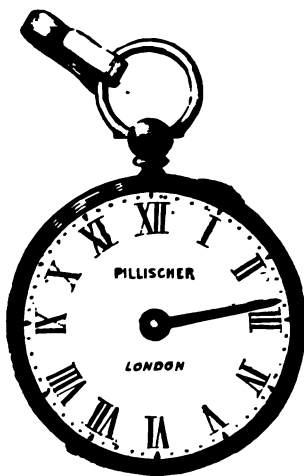
. Land Chain, Government pattern, best make, and set of arrows, 56 feet	0	10	6
. Ditto ditto ditto 66 "	0	14	6
. Ditto ditto ditto 100 "	0	18	6

### Tape Measures.

. Chesterman's Patent, best make, in strong leather case, 20 feet	.	0	5	6
. Ditto ditto ditto 33 "	.	0	7	6
. Ditto ditto ditto 50 "	.	0	8	6
. Ditto ditto ditto 66 "	.	0	10	6
. Ditto ditto ditto 100 "	.	0	15	6



## Pedometers.



FIGS. 2105 and 2106.

The **Pedometer** is an instrument for measuring walking distances, and is invaluable to the invalid requiring to walk a limited distance, as well as to the active pedestrian for similar purpose.

It consists in its main parts of a weighted lever attached to a spring, acting upon tooth wheels; a hand or index on a dial similar to an ordinary watch indicate one to twelve miles interdivided into quarter and half miles. It can be worn either suspended from the neck on a small hook—with which it is supplied—in the waistcoat pocket, being of the size of a small Geneva watch, consequently quite portable; it is perfectly trustworthy and not apt to get out of order.

					£ s.
2105.	<b>Pedometer, in Silver case</b> (see Engraving)	.	.	.	2 10
2106.	<b>Ditto ditto</b> best make	.	.	.	3 10

## Quadrants, Sextants, Prismatic Compasses, &amp;c.

2107.	<b>Ebony Quadrant</b> divided on Ivory, in mahogany case	£2. 10s. and	4 0
2108.	<b>Metal Quadrant</b> divided on Silver, in mahogany case	£4. 10s. and	6 0

## Sextants.

2109.	<b>6-inch Nautical Sextant</b> of best and improved construction, arcs divided on Silver, reading to 15 seconds, in mahogany case	.	.	.	12 10
2110.	<b>7-inch ditto ditto</b>	.	.	.	14 10
2111.	<b>Gold or Platinum Arcs</b> to the above, extra	.	.	.	2 0
2112.	<b>Box-Sextant</b> of best construction, arc divided on Silver, with shades and telescope	.	.	.	5 0
2113.	<b>Ditto ditto</b> without shades and telescope	.	.	.	3 15
2114.	<b>Leather Sling Case</b> to Box Sextant	.	.	.	0 10

## Artificial Horizons.

2115.	<b>Artificial Horizon</b> , pocket size, of parallel black glass, with level and adjustment, in case	.	.	.	from 1 15
2116.	<b>Ditto ditto</b> mercurial, best make	.	.	.	4 6

## Prismatic Compasses.

	£	s.	d.
2117. 2½-inch Prismatic Compass of best construction, with sight and shades	2	15	0
2118. 3½-inch ditto ditto	3	10	0
2119. 4-inch ditto ditto	4	15	0
2120. Leather Sling Case to Prismatic Compass	0	10	6
2120.* Tripod Stand, with ball and socket joint	1	12	6

## Magnetic Pocket Compasses.



FIGS. 2137 to 2142.

**Pocket Compass**, perfectly reliable, in brass box, with blued needle or card dial.

	£	s.	d.		£	s.	d.
2121. No. 1	0	3	6	2123. No. 3	0	5	6
2122. No. 2	0	4	6	2124. No. 4	0	6	6

Stops to check vibration of needle to the above, extra, 1s. 6d.

**Pocket Compass** of best make, in brass box, bar-needle, jewelled centre, with stop.

	£	s.	d.		£	s.	d.
2125. No. 1	0	8	6	2127. No. 3	0	10	6
2126. No. 2	0	9	6	2128. No. 4	0	12	6

**Pocket Compass** of best make, in brass box, floating card dial, agate centre, with stop.

	£	s.	d.		£	s.	d.
2129. No. 1	0	7	6	2131. No. 3	0	9	6
2130. No. 2	0	8	6	2132. No. 4	0	10	6

**Pocket Compass** of best make, in brass box, with Singer's patent pearl dial, jewelled centre, with stop.

	£	s.	d.		£	s.	d.
2133. No. 1	0	12	6	2135. No. 3	1	1	0
2134. No. 2	0	15	0	2136. No. 4	1	5	0

**Pocket Compass**, best gilt case, watch form, bar needle and enamelled dial, or Singer's patent pearl dial, jewelled centre and stop, in morocco case.

	£	s.	d.		£	s.	d.
2137. No. 1 ( <i>see</i> Engraving)	0	18	0	2140. No. 4	1	5	0
2138. No. 2	1	0	0	2141. No. 5	1	7	6
2139. No. 3	1	2	6	2142. No. 6	1	10	0

**Pocket Compass**, best gilt hunting case, watch form, bar needle and enamelled dial, or Singer's patent pearl dial, jewelled centre, and self-acting stop.

	£	s.	d.		£	s.	d.
2143. No. 1	1	15	0	2144. Nos. 3 and 4.	2	5	0

**Pocket Compass, solid "Hall-marked," silver hunting case, bar needle and enamel dial, or Singer's patent pearl dial, ruby centre, and self-acting stop.**

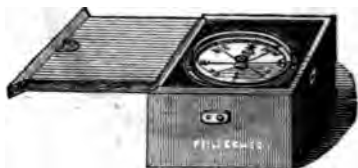
2145. No. 1.	.	.	.	.	.	.	.	.	£ s. d.
2146. No. 2.	.	.	.	.	.	.	.	.	2 15 0
2147. No. 3.	.	.	.	.	.	.	.	.	3 5 0
	.	.	.	.	.	.	.	.	3 15 0

**Pocket Compass, solid "Hall-marked" silver case, watch form, bar needle and enamel dial, or Singer's patent pearl dial, ruby centre with stop, in Morocco case:**

	£	s.	d.		£	s.	d.
2148. No. 1.	1	15	0	2150. No. 3.	2	5	0
2149. No. 2.	2	0	0	2151. No. 4.	2	10	0

**2152. Charm, or Trinket Compasses, mounted in solid gold, in the form of lockets, balls, seals, &c., in great variety from 10s. 6d. to . . . 10 0 0**

## Improved Boat or Yacht Compasses.



Figs. 2153 to 2155.



Figs. 2153 to 2155.

These compasses are constructed expressly for boats, yachts, &c., and are of the best quality; they are mounted in mahogany cases, on brass gymbals in copper bowls. The cases are balanced on jewelled centres, so as to prevent friction. A binnacle of polished mahogany with glass front, and a best brass lamp, if required, is supplied with each compass, and furnished with plates and bolts for securing to the deck, and can be fixed or removed in a few moments.

Size of Compass Box.	Diameter of Card.	Compass in Box.	Compass with Binnacle.	Compass with Binnacle and Lamp.
		£ s. d.	£ s. d.	£ s. d.
2153. No. 1—4½ in. square.	2½ inches,	0 14 6	1 15 0	2 16 0
2154. No. 2—5½ " "	3 " "	0 16 6	2 2 0	3 3 0
2155. No. 3—6½ " "	3½ " "	0 18 6	2 10 0	3 15 0

**Portable Boat or Yacht Compass, mounted in brass, with Singer's patent card, agate centre**

2156. No. 1—2½ -inch diameter	.	.	.	.	.	£ s. d.
2157. No. 2—3 " "	.	.	.	.	.	0 18
2158. No. 3—3½ " "	.	.	.	.	.	1 4
	.	.	.	.	.	1 10

**Portable Boat or Yacht Compass, of best make, gilt mountings, Singer's patent pearl dial, with stop, in mahogany case, lined with velvet**

2159. No. 1. Size of case, 2½ inches	.	.	.	.	.	£ s. d.
2160. No. 2. " 4 " "	.	.	.	.	.	2 0
	.	.	.	.	.	3 0

## Sun Dials.

	£	s.	d.
2½-inch pocket Universal Sun Dial, with bar needle compass, agate entre and stop, in morocco case . . . . .	2	0	0
2½-inch pocket Universal Sun Dial, superior make, for north and south latitudes . . . . .	2	15	0
2½-inch Universal Sun Dial of best construction, best bar needle compass, with stop, and levels for adjustment, in morocco case . . . . .	4	0	0
3½-inch ditto ditto . . . . .	5	5	0
4½-inch ditto ditto . . . . .	6	5	0

Brass Horizontal Sun Dials, divided to 5 minutes, with gnomon and compass  
points.

6-inch diameter . . . . .	1	10	0
8-inch . . . . .	2	10	0
10-inch . . . . .	3	15	0
12-inch . . . . .	4	15	0
14-inch . . . . .	6	5	0
16-inch . . . . .	8	0	0
18-inch . . . . .	10	10	0

Brass Horizontal Sun Dials, divided to 5 minutes, with equation table to show  
the difference between solar and mean time.

12-inch diameter . . . . .	7	10	0
16-inch diameter, divided to 1 minute . . . . .	12	0	0
18-inch . . . . .	14	10	0

Brass Sun Dial, in the form of a cross, with equation table en-  
graved in front, suitable for all latitudes, mounted on marble slab, size of  
cross 12 by 9 inches . . . . .

*All kinds of Sun Dials, and Pedestals for the same, made to order.*

## Mathematical or Drawing Instruments.

All the instruments in the following list are made with the greatest care and on the  
improved principles; from the cheapest to the most expensive, all are supplied with  
points, quality and finish depending on the respective prices.

	£	s.	d.
<b>Half-set Drawing Instruments</b> , consisting of brass compass, pen and pencil points, box-wood scale, in case . . . . .	0	5	6
<b>Half-set ditto</b> consisting of 6-inch brass compass, pen and pencil points, divider, and box-wood scale, in case . . . . .	0	7	6
<b>Set of Drawing Instruments</b> , consisting of 6-inch brass-jointed compass, pen and pencil points, lengthening bar, divider, one ruling pen, semi-circular brass protractor, 2 boxwood scales, in case with lock and key from £1. 1s. to . . . . .	1	10	0
<b>Ditto ditto</b> of superior quality, additional pen, bow pen and pencil, 3 boxwood scales, and best case . . . . . £2. 2s. to . . . . .	3	5	0
<b>Set of Electrum Drawing Instruments</b> , consisting of compasses, pen and pencil points, ruling pen, and one boxwood scale, in case 10s. 6d. and . . . . .	0	15	6
<b>Ditto ditto</b> consisting of compasses, pen and pencil points, lengthening bar, knife key, ruling pen, and 2 boxwood scales, in case . . . . . from £1. 5s. to . . . . .	2	5	0
<b>Ditto ditto</b> similar to above, with single knee-joint compasses, hair divider, and 2 ivory scales . . . . . £3. 10s. and . . . . .	4	0	0
<b>Ditto ditto</b> of very superior quality, double knee-jointed compasses, and best needle points . . . . . £4 and . . . . .	5	0	0
<b>Ditto ditto</b> very superior, consisting of double knee-jointed compasses, ink and pencil points, best hair divider, lengthening bar, jointed pen and pencil bows, set of 3 spring bows, 2 ruling pens, 3 ivory scales, knife key, and a best polished walnut or rosewood case . . . . . £5. 5s. and . . . . .	6	6	0



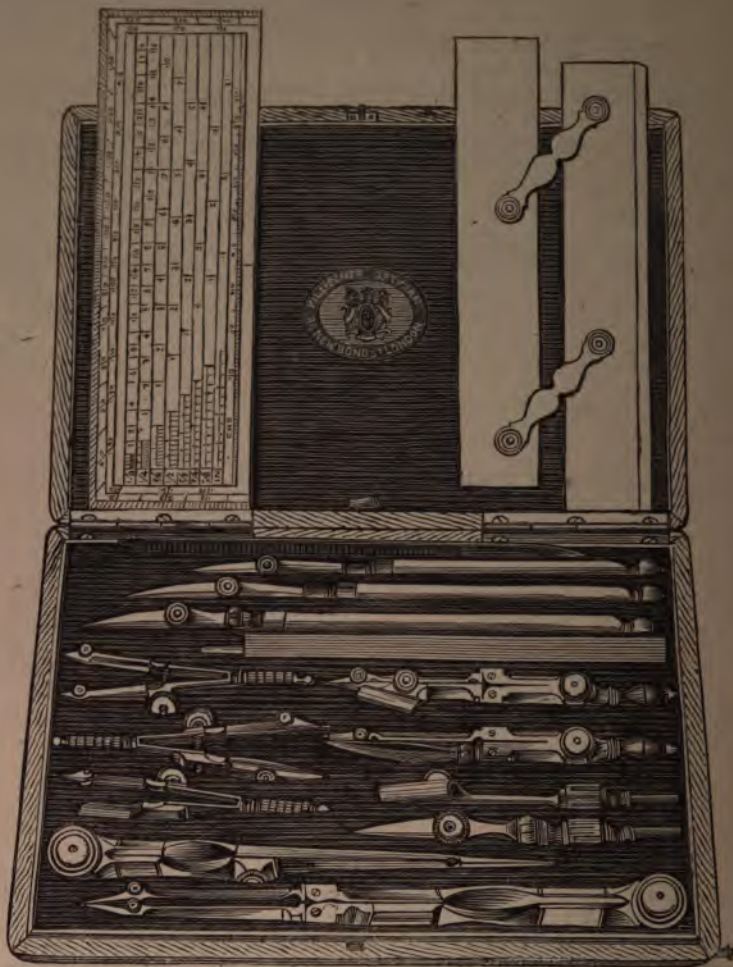


FIG. 2187.

2186. Set of highly finished Electrum Drawing Instruments, in best walnut or rosewood case, bound with electrum, and lined with silk velvet; containing 6-inch double knee-jointed compasses, pen and pencil points, long and short lengthening bars, beam compasses with fine screw adjustment, 9-inch fully divided proportional compasses, triangular compasses, 4-inch double knee-jointed compasses, with ink and pencil points, a 5-inch and a 4-inch best hair dividers, ink and pencil double-jointed bows, 3 best spring bows, road pen with set of wheels, pricker, 4 different ruling pens, knife and screw keys, 6-inch protractor, six 12-inch engine, divided ivory scales and offsets, 12-inch electrum rolling parallel rule, Indian ink, 16 cakes of fine water colours, camel's hair brushes and palette, &c., &c. 27 10
- All the instruments contained in the above case are made with the best needle points.

2187. Set of best Electrum Instruments, pocket size, in morocco, rosewood or walnut case, containing 5-inch double knee-jointed compasses with best needle points, ink and pencil points, double knee-jointed pen and pencil bows, set of three spring bows with needle points, best hair divider, lengthening bar, 3 different ruling pens and knife key, a best ivory parallel rule and ivory protractor (see Engraving) 5 5

2188. Ditto ditto without knee-joints and needle points 4 4

## Drawing Instruments, without Cases.

	BRASS.			ELECTRUM.			ELECTRUM, Best Quality.		
	£	s.	d.	£	s.	d.	£	s.	d.
Half-set, consisting of 4½ or 6-inch compasses, ink and pencil points, lengthening bar, and knife key . . . . .	0	15	0	0	18	6	1	2	6
Ditto ditto same as the above, with one knee-joint . . . . .	0	16	6	1	2	6	1	5	6
Ditto ditto same, with double joints . . . . .	1	1	0	1	6	6	1	11	6
Ditto ditto with needle points . . . . .	...			1	11	6	2	0	0
4½ or 6-inch Compass, double knee-jointed, one leg with needles, the other for ink and pencil point . . . . .	...			...			1	10	0
6-inch Compass . . . . .	0	3	6	0	5	0	0	7	6
Ditto ditto common, for school use, with ink and pencil points, 1s. 6d., 2s. 6d., 3s. 6d. and . . . . .	0	4	6						
<b>Dividers.</b>									
Divider, 4 or 5-inch, sector-jointed . . . . .	0	4	6	0	5	6	0	7	6
Ditto, hair-spring, outside or inside screw . . . . .	0	6	6	0	7	6	0	10	6
<b>Bows.</b>									
Bows, for ink and pencil . . . . .	0	4	6	0	5	6	0	7	6
Ditto ditto superior double-jointed . . . . .	0	8	6	0	10	6	0	12	6
Ditto ditto and needle points . . . . .	...			...			0	15	0
<b>Spring Bows.</b>									
Set of three spring bows, in case . . . . .	...			0	10	6	0	12	6
Ditto superior . . . . .	...			0	12	6	0	15	6
Ditto with needle-points . . . . .	...			0	17	6	1	1	0

## Tubular Compasses.



Fig. 2205.

	BRASS.			ELECTRUM.		
	£	s.	d.	£	s.	d.
Tubular Compasses, 5 or 7-inch, with improved sliding bars, in morocco case . . . . .	1	15	0	2	0	0
Ditto ditto with needle-points . . . . .	2	0	0	2	5	0

## Proportional Compasses.



FIG. 2207.

			BRASS.			ELECT.	
			£	s.	d.	£	s.
2207. Proportional Compasses,	6-inch,	divided on both sides.	1	2	6	1	5
2207. Ditto	ditto	with adjustment	1	10	0	1	12
2208. Ditto	ditto	quite plain	0	14	0	0	16
2209. Ditto	ditto	9-inch long, divided on both sides	...			2	5
2210. Ditto	ditto	with adjustment	...			2	15

## Whole and Half Compasses.



FIG. 2212.

2211. Whole and Half Compasses,	in electrum	...	...	...	£	s.
2212. Ditto	ditto	best quality	...	...	1	0
			...	...	1	5

## Pocket Compasses.



FIG. 2213.



FIG. 2216.



FIG. 2217.

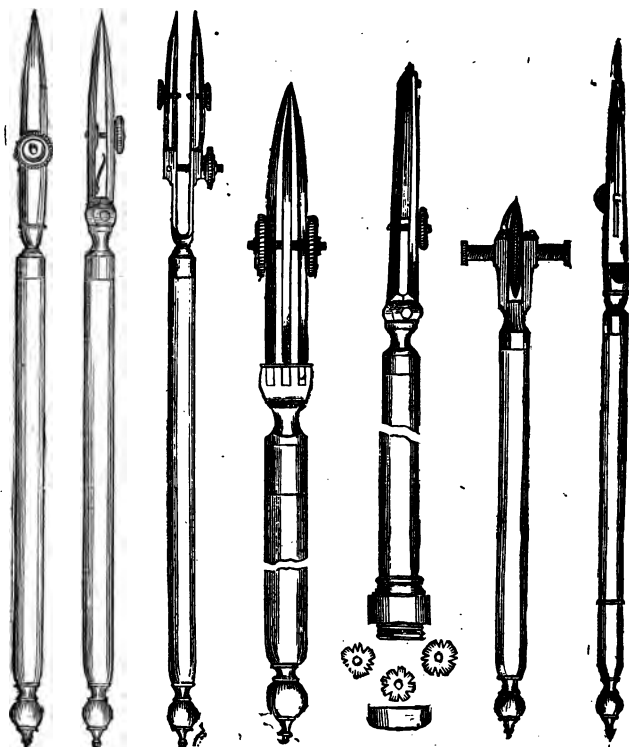


FIG. 2218.

2213. Napier Compasses,	electrum,	forming a set of instruments, ink and pencil points to revolve, in case, with scale and box of leads	£1. 10s. and	2 2
2214. Ditto	ditto	without case and scale	£1. 5s. and	1 15
2215. Ditto	ditto	in solid silver	...	2 15
2216. Pillar Compasses,	with plain points,	electrum	10s. 6d. and	0 15
2217. Ditto	ditto	best quality, with lengthening bars, ink and pencil points	£2. 2s. and	2 10
2218. Ditto	ditto	without lengthening bars	£1. 5s. and	1 15



## Drawing or Ruling Pens, &amp;c.



Figs. 2219. 2220. 2221. 2222. 2223. 2224.

	2225.		
	BRASS.	ELECTRUM.	
	£ s. d.	£ s. d.	
Drawing Pen, ivory handle, plain	0 2 6	0 3 0	
Ditto ditto best quality, with turn-up nibs	0 3 6	0 4 6	
Road or Double Pen	0 5 6	0 6 6	
Colouring or Bordering Pen	0 5 6	0 6 6	
Wheel Pen, with set of 4 wheels	0 7 6	0 8 6	
Opisometer, for measuring curves on maps, &c., small size, in case	—	0 4 6	
Ditto ditto large size	—	0 5 6	
Pricker, with compartment for spare needles	0 3 0	0 3 6	
Tracer, steel	—	0 2 0	
Ditto agate	—	0 4 6	
Drawing Pens, six assorted, best quality, with one ivory handle to fit, in morocco case	—	1 5 0	

## Beam Compasses.

Beam Compass Heads or Trammels, with plain steel points	0 16 6
Ditto ditto best quality and needle points	1 5 0
Ditto ditto sliding tubular, ink and pencil points	1 12 6
Ditto ditto with adjustment	2 5 0

## Triangular Compasses.

Triangular Compasses, 5-inch, with movable bar	1 1 0
Ditto ditto with slide to produce ellipses	1 11 6

**Protractors.**

		BRASS.			ELECTRUM		
		£	s.	d.	£	s.	d.
2236.	6-inch Circular Protractor of best make, folding arms, clamp, verniers and tangent motion, divided on silver to $\frac{1}{2}$ minutes, in mahogany case . . . . .	5	10	0	6	10	
2237.	7-inch ditto ditto . . . . .	6	15	0	8	0	
2238.	8-inch ditto ditto . . . . .	7	15	0	9	5	
2239.	6-inch Protractor, circular, one vernier and arm, in mahogany case . . . . .	3	0	0	3	15	
2240.	6-inch ditto, plain, best make . . . . .	0	15	0	1	0	
2241.	7-inch ditto ditto . . . . .	1	0	0	1	5	
2242.	8-inch ditto ditto . . . . .	1	7	6	1	12	
2243.	9-inch ditto ditto . . . . .	1	15	0	2	5	
2244.	10-inch ditto ditto . . . . .	2	5	0	3	0	
2245.	12-inch ditto ditto . . . . .	2	15	0	3	15	
2246.	6-inch Protractor, semicircular, of best make, with vernier and arm, in mahogany case . . . . .	3	5	0	3	15	
2247.	8-inch ditto ditto . . . . .	4	5	0	5	0	
2248.	Protractors, circular or semicircular, various sizes, from 1s. 6d., 3s., 4s., 5s. to 10s.						
2249.	Protractor, ivory, 6 in. long, 3s. 6d., 5s. and 6s. 6d.						
2250.	Ditto boxwood „ 1s. 6d. and 2s.						

**Elliptographs.**

		BRASS.			ELECTRUM		
		£	s.	d.	£	s.	d.
2251.	Elliptograph for producing elliptic curves, $\frac{1}{4}$ to 6-inch axis	5	0	0	7	0	0
2252.	Elliptic Instrument, with pen and pencil points in case .	—			2	10	0

**Eidographs.**

		£	s.
2253.	Eidograph, for reducing plans, &c., complete in mahogany case, 30 inch	10	0
2254.	Ditto ditto 36 inch	12	0

**Pentagraphs.**

For copying Plans, reducing or enlarging Drawings, &c., in Mahogany Case.

	£	s.	d.		£	s.
2255. 18-inch . . . . .	4	15	0	2258. 36-inch . . . . .	8	10
2256. 24 „ . . . . .	5	15	6	2259. 42 „ . . . . .	10	5
2257. 30 „ . . . . .	7	5	0	2260. 48 „ . . . . .	11	10

**Engine Divided Scales.****Rules, Squares, &c., &c.**

Sets of Scales in Cases.

2261.	Chain Scales, 12-inch and offsets, set of six, divided with both sides alike, or in feet and links, in case, with lock and key, best quality only, boxwood	1	5
2262.	Ditto ditto transparent ivory	3	10
2263.	Ditto ditto electrum	4	15
2264.	Ditto ditto 18 inch, boxwood	2	
2265.	Ditto ditto „ ivory	6	

<b>Chain Scales</b> , 6-inch, set of 6, in spring morocco case, boxwood . . .	£	s.	d.
	0	15	6
<b>Ditto</b> ditto ditto ivory	2	0	0
<b>Architect's or Engineer's Scales</b> , 12-inch, fully divided set of six in case with lock and key, boxwood	1	5	0
<b>Ditto</b> ditto transparent ivory	3	0	0
<b>Offset Scales</b> , 6-inch, set of six in spring morocco case, boxwood . . .	0	17	6
<b>Ditto</b> ditto transparent ivory	2	0	0

\*\*\* Scales made and divided to every foreign scale, to order.

### Marquois Scales.

In Mahogany Case, best quality make.

<b>Boxwood</b> . . .	£	s.	d.	2274. <b>Brass</b> . . .	£	s.	d.
	0	12	0		2	10	0
<b>Ivory</b> . . .	3	5	0	2275. <b>Electrum</b> . . .	3	10	0

### Open Divided Scales.

<b>12-inch Scale</b> , containing $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ and 1-inch scales, or $\frac{3}{8}$ , $\frac{1}{2}$ , $1\frac{1}{2}$ and 3-inch scales, best quality make only . . .	boxwood	0	3	6
<b>Ditto</b> ditto ditto transparent ivory		0	12	0
<b>18-inch</b> ditto ditto . . .	boxwood	1	1	0
<b>Ditto</b> ditto ditto . . .	boxwood	0	5	6
<b>24-inch</b> ditto ditto . . .	boxwood	0	8	6
<b>12-inch Builder's Universal Scale</b> , containing 14 scales . . .	boxwood	0	3	6
<b>Ditto</b> ditto ditto transparent ivory		0	12	0
<b>18-inch</b> ditto ditto . . .	boxwood	1	1	0
<b>Ditto</b> ditto ditto . . .	boxwood	0	5	6
<b>12-inch Architect's Universal Scale</b> , containing 17 scales . . .	boxwood	0	3	6
<b>Ditto</b> ditto ditto transparent ivory		0	12	0
<b>18-inch</b> ditto ditto . . .	boxwood	1	1	0
<b>Ditto</b> ditto ditto . . .	boxwood	0	5	6
<b>6-inch Universal Scales</b> , like above . . .	boxwood	0	2	6
<b>Ditto</b> ditto transparent ivory		0	6	6

\*\*\* Scales of every description made to order.

### Fully Divided Scales.

<b>6-inch fully divided Scale</b> , containing any two ordinary scales, with not more than 60 divisions to the inch, 10, 20, 30, 40, 50 and 60, either with both edges alike, or with feet on one edge, or links to correspond on the other, or crossed, like 10 and 40, 20 and 50, 30 and 60, &c., best quality only . . .	boxwood	0	3	6
<b>Ditto</b> ditto ditto transparent ivory		0	6	6
<b>12-inch</b> ditto ditto . . .	boxwood	0	12	0
<b>Ditto</b> ditto ditto . . .	boxwood	0	3	6
<b>18-inch</b> ditto ditto . . .	boxwood	0	5	6
<b>Ditto</b> ditto ditto transparent ivory		1	1	0
<b>6-inch Scale</b> , with from 60 to 100 divisions per inch . . .	boxwood	0	6	6
<b>12-inch</b> ditto ditto . . .	boxwood	0	15	0

2299. 2-inch Offset Scale			transparent ivory	£ s. d. 0 3 0
2300. Ditto ditto			boxwood	0 0 6
2301. 3-inch ditto			"	0 1 6
2302. Ditto ditto			transparent ivory	0 3 6
2303. 6-inch ditto	for sections		"	0 7 6
2304. Ditto ditto	ditto		boxwood	0 3 6

### Computing Scales.

2305. Computing Scale, improved, containing two of the following scales, 1, 2, 3, 4, 5 and 6 chains to the inch.		0 18 6
2306. Universal Computing Scale, as used in H.M. Tithe Commission Office, containing 1, 2, 3, 4, 5, 6 chains to the inch, and 6 inches and 5 feet to the mile, in case		3 5 0
2307. Extra Scales to the above	each	0 4 6
2308. Computing Horn Paper, 10, 20, 30, 40, 50 and 60	per sheet	0 4 6

### Parallel Rules, &c.

	6-Inch.	9-Inch.	12-Inch.	15-Inch.	18-Inch.	24-Inch.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
2309. Parallel Rule, plain bar, ebony	0 1 0	0 1 6	0 2 3	0 3 6	0 4 3	0 6 0
2310. Ditto ditto ivory	0 4 6	0 7 6	0 12 6	—	—	—
2311. Ditto ditto ebony, brass edge	0 4 6	0 5 0	0 6 6	0 8 0	0 9 6	0 15 0
2312. Ditto ditto rolling and brass wheels	0 5 0	0 5 6	0 7 6	0 9 6	0 12 6	0 17 6
2313. Ditto ditto and brass bridge	0 6 6	0 8 0	0 10 0	0 13 0	0 16 0	1 2 6
2314. Ditto ditto with ivory edge	0 6 6	0 8 0	0 10 6	0 13 6	0 18 0	1 7 6
2315. Ditto ditto and brass bridge	0 8 6	0 10 0	0 13 6	0 16 6	1 0 0	1 2 6
2316. Ditto ditto and electrum bridge	0 12 6	0 15 6	0 18 6	1 4 0	1 12 6	2 5 0
2317. Ditto ditto in solid brass fitted in mahogany case	0 16 6	1 0 0	1 4 0	1 10 0	1 18 6	2 10 0
2318. Ditto ditto in solid elec- trum	1 0 0	1 6 0	1 11 6	1 18 6	2 8 6	3 5 0

\*.\* Larger Rules made to order.

### T Squares.

	18-Inch.	24-Inch.	30-Inch.	36-Inch.	42-Inch.	54-Inch.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
2319. T Square, pear-tree, single rabbet	0 2 0	0 2 6	0 3 0	0 3 6	0 4 6	0 6 0
2320. Ditto ditto double rabbet	0 2 6	0 3 6	0 4 6	0 5 6	0 7 0	0 12 6
2321. Ditto ditto and shifting head	0 3 0	0 4 0	0 5 6	0 7 0	0 8 6	0 14 6
2322. Ditto ditto and ebony	0 5 0	0 6 6	0 8 6	0 11 6	0 16 0	1 4 6

## Ship Curves.

						£	s.	d.
Ship Curves, pear-tree, set of 12	.	.	.	.	.	0	10	6
Ditto ditto vulcanite "	12	.	.	.	.	1	5	0
Ditto ditto " "	20	.	.	.	.	1	15	0
Ditto ditto pear-tree "	20	.	.	.	.	0	17	6
Ditto ditto " "	50 in case	.	.	.	.	2	0	0
Ditto ditto vulcanite "	50 "	.	.	.	.	4	10	0
Ditto ditto prepared cardboard, set of 50, in case		.	.	.	.	1	1	0
Ditto ditto " "	100 "	.	.	.	.	1	17	6

## Railway Curves.

Railway Curves, set of 24, pear-tree, in case	.	.	.	.	1	1	0
Ditto ditto " 24, vulcanite "	.	.	.	.	1	11	6
Ditto ditto " 50 " "	.	.	.	.	3	5	0
Ditto ditto " 50 pear-tree "	.	.	.	.	2	10	0
Ditto ditto " 100 " "	.	.	.	.	4	5	0
Ditto ditto " 100 vulcanite "	.	.	.	.	6	0	0

Angles or Set Square, pear-tree, 45°, 4-inch, 6d.; 6-inch, 9d.; 8-inch, 1s.; 10-inch, 1s. 6d.; 12-inch, 2s. 6d.

Ditto ditto pear-tree, 60° or 67½°, 4-inch, 4d.; 6-inch, 6d.; 8-inch, 9d.; 10-inch, 1s.; 12-inch, 1s. 6d.

Ditto ditto vulcanite, 45°, 4-inch, 1s.; 6-inch, 1s. 6d.; 8-inch, 2s.; 10-inch, 3s.; 12-inch, 4s.

Ditto ditto vulcanite, 60° or 67½°, 4-inch, 9d.; 6-inch, 1s.; 8-inch, 1s. 6d.; 10-inch, 2s.; 12-inch, 3s.

Ditto ditto mahogany framed, ebony edged, 45°, 4-inch, 2s. 6d.; 6-inch, 3s. 6d.; 8-inch, 4s. 6d.; 10-inch, 5s. 6d.; 12-inch, 6s. 6d.

Ditto ditto ditto 60° or 67½°, 4-inch, 2s.; 6-inch, 2s. 6d.; 8-inch, 3s. 6d.; 10-inch, 4s.; 12-inch, 5s.; 15-inch, 6s.; 18-inch, 8s. 6d.

\*\* Ivory, steel, electrum and glass set squares made to order.

French Curves in great variety, pear-tree from 6d. each.

Ditto ditto ditto vulcanite " 1s. each.

	12-Inch.	18-Inch.	24-Inch.	36-Inch.	48-Inch.	60-Inch.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Straight Edge, pear-tree	0 0 6	0 0 9	0 1 0	0 1 6	0 2 6	0 3 0
Ditto ditto ebony edged	0 1 0	0 1 6	0 2 0	0 2 6	0 4 6	0 6 0
Ditto ditto best bright or blue steel	0 5 0	0 7 0	0 10 0	0 15 6	1 5 0	1 11 6

## Pocket Folding Rules.

1-foot 4-fold Boxwood Rule, from 1s. 6d. to 2s. 6d.

Ditto ditto Ivory " " 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d. to 12s. 6d.

2-foot 4-fold " " 5s. 6d., 7s. 6d., 10s. 6d., 12s. 6d. to 25s.

Ditto ditto Boxwood " " 2s. 6d., 3s. 6d., 4s. 6d., 5s. 6d. to 10s.

## Terrestrial and Celestial Globes.

### Low Stands. Stained Wood, with Brass Meridians.

	£	s.	d.		£	s.	d.
2350. 6-inch	.	.	1 15	2353. 15-inch	.	.	6 12 0
2351. 9-inch	.	.	3 10	2354. 18-inch	.	.	8 15 0
2352. 12-inch	.	.	3 17 0	2355. 21-inch	.	.	11 10 0

### Low Stands. Mahogany, with Brass Meridians.

	£	s.	d.		£	s.	d.
2356. 6-inch	.	.	2 2 0	2359. 15-inch	.	.	7 5 0
2357. 9-inch	.	.	3 10 0	2360. 18-inch	.	.	9 7 0
2358. 12-inch	.	.	4 5 0	2361. 21-inch	.	.	12 15 0

### High Mahogany Stands, Brass Meridians with Compass.

	£	s.	d.		£	s.	d.
2362. 12-inch	.	.	6 15 0	2364. 15-inch	.	.	13 17 0
2363. 15-inch	.	.	1 0 0	2365. 21-inch	.	.	16 5 0

### High Spanish Mahogany Stands, with Brass Meridians and Compass.

	£	s.	d.		£	s.	d.
2366. 12-inch	.	.	7 15 0	2368. 15-inch	.	.	17 5 0
2367. 15-inch	.	.	13 17 0	2369. 21-inch	.	.	20 15 0

### High Stands, Satin Wood, with Brass Meridians, Compass, &c.

	£	s.	d.		£	s.	d.
2370. 12-inch	.	.	9 5 0	2372. 15-inch	.	.	21 0 0
2371. 15-inch	.	.	15 0 0	2373. 21-inch	.	.	25 10 0

### Table or Reading Globes for easy Reference, on Mahogany Pedestal Stand.

	£	s.	d.		£	s.	d.
2374. 6-inch	.	.	0 17 6	2377. 15-inch	.	.	3 15 0
2375. 9-inch	.	.	1 16 0	2378. 18-inch	.	.	5 15 0
2376. 12-inch	.	.	2 5 0	2379. 21-inch	.	.	8 0 0

		£	s.	d.
2380.	Globes in boxes $3\frac{1}{2}$ -inch	.	.	each 0 3 0
2381.	Ditto " $2\frac{1}{2}$ "	.	.	" 0 2 0
2382.	Ditto " $1\frac{1}{2}$ "	.	.	" 0 1 0

## Quadrants.

2383.	21-inch, 7s. 6d.; 18-inch, 6s. 6d.; 15-inch, 4s. 6d.; 12-inch, 3s. 6d.; 9-inch, 2s. 6d.; 6-inch, 1s. 6d.	
2384.	<b>Orrery</b> , showing the relative positions of all principal planets and their satellites; the diurnal and annual motions of the earth; the phases of the moon, &c., with rack movement, in case, complete	10 10 0
2385.	<b>Orrery</b> , of the most improved construction, representing the motions of all the planets and their satellites, the movements of the earth and moon, the sun's rotation on its axis, revolutions of Jupiter, Mars, Venus, &c., clockwork motion, in case complete	50 0 0



## Philosophical Instruments.

## Frictional Electricity.

				£	s.	d.
9-inch Plate Electrical Machine	on firm mahogany stand, with clamp			2	15	0
12-inch	ditto	ditto		4	0	0
15-inch	ditto	ditto		5	0	0
18-inch	ditto	ditto	of the best and improved construction, on firm stand, with clamp	8	10	0
24-inch	ditto	ditto		10	10	0
30-inch	ditto	ditto		15	15	0
36-inch	ditto	ditto		22	10	0
Cylinder Electrical Machine	mounted on mahogany frame, glass cylinder and brass conductors, inches 6 × 4			1	2	6
Ditto	ditto	„ 8 × 5		2	2	0
Ditto	ditto	„ 10 × 6		3	5	0
Educational Cylinder Machine,	packed in case with the following apparatus: Leyden jar, spiral, whirl, pith ball stand, head of hair, discharger, &c.		£3, £4, £5 to	8	10	0
12-inch Educational Plate Electrical Machine,	packed in case with the following apparatus,—Leyden jar, hand spiral, pith ball stand and pith balls, image plates, set of bells, jointed discharger, head of hair, two figures, box of amalgam, and length of chain, complete			6	6	0
18-inch Educational Plate Electrical Machine,	packed in strong case with the following apparatus,—six Leyden jars in tray, forming a battery, hand spiral, head of hair, three dancing pith figures, image plate, Bennett's gold leaf electrometer, Henley's quadrant ditto, set of three bells, orrery, spider, thunder house, insulated stool, bucket and syphon, pith-ball stand, pith balls, flask with cap and valve, pistol, box of amalgam, and length of chain, complete			15	0	0
Circular Glass Plates with polished edges of solid vulcanite plates made to order.						
Bennet's Gold-Leaf Electrometer		15s., £1. 5s. and		1	10	0
Henley's Quadrant	ditto	5s. 6d. and		0	12	6
Lane's	ditto	£1. 1s. and		1	10	0
Cavallo's Pith-Ball	ditto			1	10	0
Cuthbertson's	ditto			2	12	6
Coulomb's	ditto for measuring small quantities of electricity with accuracy, also its repulsive or attractive force			2	5	0
Henley's Universal Discharger,	with press, forceps, &c, for passing electricity through various substances	£1. 5s. and		2	0	0
Electrical Discharger		4s. 6d. and		0	7	6
Ditto	ditto jointed, glass handles	12s. 6d. and		1	5	0
Ditto	ditto ditto with two handles	15s. and		1	5	0
Image Plate, with brass stand		7s. 6d. and		0	15	0
Dancing Figures for ditto		each		0	1	0
Aurora Borealis Flask		7s. 6d. and		0	15	0
Set of Musical Bells, containing the gamut		£1. 10s. and		2	5	0
Set of Three Bells				0	7	0
Electrical Cannon for firing hydrogen gas		12s. 6d. and		0	18	6
Cast-Iron Ditto for firing gunpowder				0	18	6
Electrical Brass Pistol				0	7	0
Sportsman and Birds		15s. and		1	1	0
Sturgeon's Apparatus for firing gunpowder				0	10	0
Thunder House				0	7	6
Fire	Ditto			0	15	0
Pith-ball Stand				0	5	6
Pith-balls		per dozen, 9d. and		0	1	0

2423. Egg-stand . . . . .	7s. 6d. and	0 1
2424. Egg-shaped Glass, with stopcock and sliding wire, for showing light in vacuo . . . . .		1 1
2425. Hand Spiral . . . . .	3s. 6d. and	0
2426. Set of Five Spirals on Stand . . . . .	£1. 5s. and	1 1
2427. Luminous Words and Devices in frame . . . . .	7s. 6d. and	0 1
2428. Revolving Spiral on stand . . . . .		0
2429. Carved Head of Hair . . . . .	3s. 6d. and	0
2430. Electrical See-saw . . . . .	12s. 6d. and	0 1
2431. Ditto Swing . . . . .		0 1
2432. Ditto Spider and Whirl . . . . .	2s. 6d. and	0
2433. Ditto Bucket and Syphon . . . . .	2s. 6d. and	0
2434. Ditto Swan . . . . .		0
2435. Ditto Obelisk, to illustrate the use of lightning conductors . . . . .		0
2436. Luminous Conductor, for showing the falling star . . . . .		0 1
2437. Ditto ditto large, with stopcock . . . . .	£1. 10s. and	2 1
2438. Diamond Spotted Jar . . . . .	7s. 6d. and	0 1
2439. Set of Thres Electrical Whirls . . . . .		0
2440. Electrical Flask, with cap and valve . . . . .		0
2441. Insulated Stool . . . . .		0 1
2442. Magic Picture . . . . .		0
2443. Electrical Planetarium, showing the motions of the Earth, Sun, Moon, &c. . . . .		0
2444. Electrical Spring Key . . . . .		0
2445. Glass Globe, for showing brilliant voltaic light from charcoal points in vacuo . . . . .	£1. 5s. and	1
2446. Amalgam . . . . .	per box	0
2447. Brass Chain . . . . .	per yard	0

### Induction Coils and Apparatus.

2448. Induction Coil, to give $\frac{1}{8}$ -inch spark . . . . .		1
2449. Ditto ditto „ $\frac{1}{4}$ -inch „ . . . . .		2
2450. Ditto ditto „ $\frac{1}{2}$ -inch „ . . . . .		3
2451. Ditto ditto „ 1-inch „ . . . . .		6
2452. Inductorium, of the best and most improved construction, with all the latest improvements, to give 2-inch spark . . . . .		8
2453. Ditto ditto „ 4-inch „ . . . . .		15
2454. Ditto ditto „ 6-inch „ . . . . .		21
2455. Ditto ditto „ 8-inch „ . . . . .		26
2456. Ditto ditto „ 10-inch „ . . . . .		37

Larger Inductoriums to order.

### Batteries.

2457. Grove's, single, half-pint . . . . .		0
2458. Ditto „ pint . . . . .		0
2459. Ditto set of five, platinum, $5 \times 2\frac{1}{2}$ -inch, in tray . . . . .		1
2460. Ditto „ „ $6\frac{1}{2} \times 3$ -inch, „ . . . . .		4
2461. Ditto „ ten, „ „ „ . . . . .		9
2462. Smee's Battery, single, pint . . . . .		0
2463. Ditto ditto, quart . . . . .		0
2464. Ditto ditto, two-quart . . . . .		0
2465. Daniell's Constant Battery, pint . . . . .		0
2466. Ditto ditto quart . . . . .		0
2467. Ditto ditto two quarts . . . . .		0
2468. Bunsen's ditto pint . . . . .		0
2469. Ditto ditto quart . . . . .		0
2470. Ditto ditto two quarts . . . . .		0

\*\*\* All kinds of Batteries made to order.

Volta and Magneto Electric Apparatus.

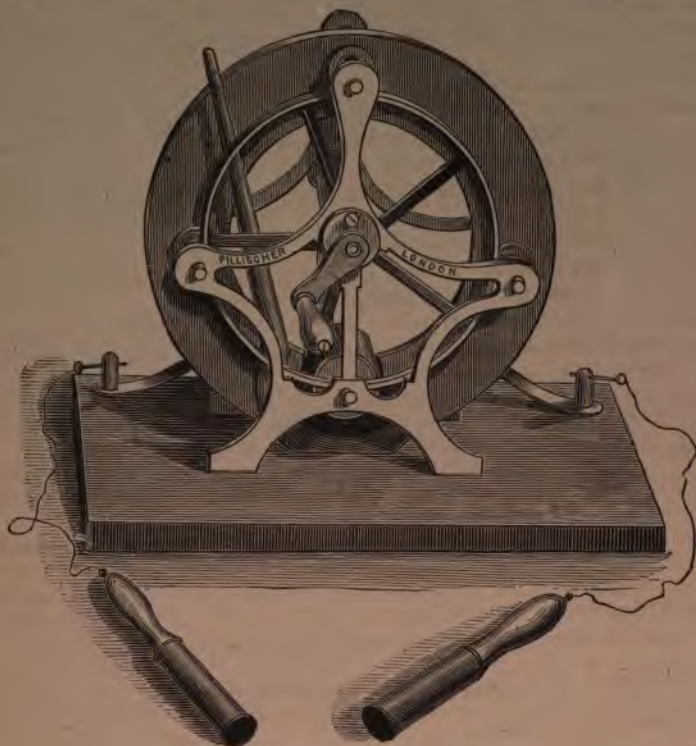


FIG. 2481.

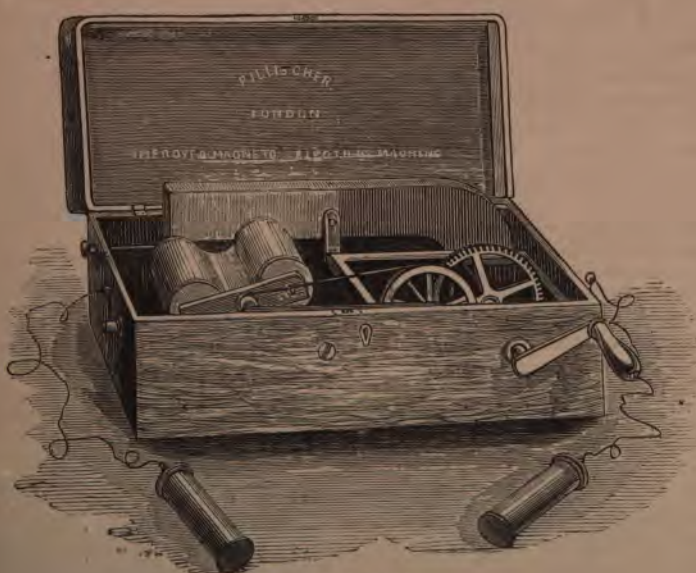


FIG. 2483.

	£	s.	d.
2471. Gassiot's or Torricellian Vacuum Tubes, for exhibiting stratification of light, and its brilliant colours produced by the passage of electricity through rarified air and gases . . . . .	1	15	
2472. Gassiot's Glass-tube, 30-inch ditto . . . . .	1	10	
2473. Egg-shaped Glass, with stop-cock, for exhibiting electric light in vacuo . . . . .	2	5	
2474. Gassiot's Luminous Cascade . . . . .	3	10	
2475. Geissler's Vacuum Tubes, in great variety . . . . .	0	7	
2476. Ditto ditto in sets of six, in box . . . . .	0	10	
2477. Carbonic Acid Vacuum Tubes . . . . .	1	5	
2478. Vacuum Tubes, composed of two or more distinct vacuums, showing a variety of colours . . . . .	0	10	
2479. Vacuum Garlands, single and double . . . . .	1	10	
2480. Uranium Glass Vessel . . . . .	0	5	
2481. Ditto ditto solid block in case . . . . .	0	18	
2482. Phosphoroscope . . . . .	1	1	
2483. Magneto-Electric Machine for medical purposes, of best construction, in mahogany case (see Engraving) . . . . .	2	5	
2484. Ditto ditto improved circular form, in which the electric current passes continuously in one direction, an excellent machine for medical purposes, on stand under glass shade, or in mahogany case (see Engraving) . . . . .	2	10	
2485. Ditto ditto with two magnets, two armatures and multiplying motion, suitable for exciting electro-magnets, blasting, &c., in mahogany case . . . . .	6	10	
2486. Ditto ditto with four magnets, very powerful, in strong mahogany case . . . . .	10	10	
2487. Ditto ditto with three magnets, specially made for field use, or blasting purposes, in extra strong case . . . . .	8	0	
2488. Astatic and Dipping Needles, to illustrate terrestrial magnetism . . . . .	1	1	
2489. Magnetic Steel Needles, of various sizes on stands, to illustrate the influence of terrestrial magnetism, and the polarity of magnetic bodies by repulsion and attraction . . . . .	0	15	
2490. Dipping Needle, with graduated quadrant . . . . .	1	10	
2491. Ditto ditto with circular graduated ring . . . . .	1	5	
2492. Electro Magnets, small . . . . .	0	12	
2493. Ditto ditto large, on stand . . . . .	2	0	
2494. Permanent ditto, single or compound . . . . .	0	17	
2495. Bar Magnets, per pair . . . . .	0	5	
2496. Galvanometer . . . . .	0	10	
2497. Ditto with astatic needle and levelling screws . . . . .	1	10	
2498. Oersted's Experiment, illustrating the deflection of a magnetic needle by electrical current . . . . .	1	1	0
2499. Telegraphic Instruments, alphabetical, for transmitting and receiving . . . . .	5	5	0
2500. Bell for ditto . . . . .	1	10	0
2501. Electric Bell, small size, with battery and 50 yards of insulated wire, with directions for fixing—a most handy and convenient apparatus for invalids, office use, and in any place where an extra bell is required; it is not apt to get out of order, the battery will last six months, and can be replenished again at the cost of about 3d. (see Engraving) . . . . .	1	5	0
2502. Ditto ditto ditto with larger bell . . . . .	1	10	0
** Houses, Public Buildings, Ships, &c., fitted up with Electric Bells on the most improved principle, as per estimate.			
2503. Platinaed Silver, per ounce . . . . .	0	10	
2504. Platinum Foll, or wire, per ounce . . . . .	1	12	
2505. Amalgamated Zinc Plates, per lb. . . . .	0	1	
2506. Copper Wire, of all sizes, covered with cotton or silk, per lb. . . . .	0	5	



FIG. 2501.

**Set of Educational Electro-magnetic Apparatus**, consisting of an Electro-magnetic Coil, Smee's Battery, Professor Oersted's Experiment, Ritchie's ditto, galvanometer, electro magnet, and mahogany stand, £ s. d.  
&c., packed in case, with lock and key . . . . . 5 0 0

\* \* All kinds of Electrical Apparatus to order.

### Pneumatic Apparatus.

Single Barrel Air-Pump, with glass receiver-plate, about 3½ inches	1	1	0	
Ditto ditto with plate 4½ "	1	10	0	
Ditto ditto " 5 "	1	15	0	
Ditto ditto " 6 "				
and sloping barrel	2	2	0	
Double Barrel Air-pump, small size plate, 6 inches	4	5	0	
Ditto ditto middle-size plate, 9 inches, mercurial syphon, gauge and clamp	9	10	0	
Ditto ditto plate, 10 inches	11	10	0	
Ditto ditto largest size, for the use of Schools, Colleges, &c.; barrels, 12 by 2½ inches, plate 14 inches diameter, on raised stage and mahogany stand, barometer, gauge, &c., complete	31	10	0	
Ditto ditto smaller size, 10-inch plate	18	10	0	
Tate's Pump, with gauge, &c.	4	5	0	
Exhausting or Condensing Syringes	0	7	6	
Ditto ditto combined as one instrument	0	10	6	
Magdeburg Hemispheres	15s. 6d. and	1	5	0
Guinea and Feather Experiment, 2 fall		0	15	6
Ditto ditto 3 "		1	2	0
Tall Glass Receiver for ditto		0	10	6
Lungs Glass		0	6	6
Hand and Bladder Glass		0	3	0
Filtering Cup for Mercurial Shower		0	4	6
Fire Syringe		0	3	6
Bacchus Experiment		1	10	0
Bell ditto	10s. 6d. and	0	15	0
Plate and Sliding Rod, useful in many experiments	10s. 6d. and	0	15	0
Windmill Experiment		1	15	0
Lead Weights and Bladder ditto		0	8	6

2533. Single Transferer, with jet for fountains in vacuo	£ 2
2534. Ditto ditto larger, and with conduit pipe	0 15
2535. Double ditto ditto	0 18
2536. Fruit and Taper Stand	1 16
2537. Copper Bottle, Beam and Stand, for weighing air and gases	0 3
2538. Torricellian Barometer Experiment	2 10
2539. Ditto ditto best	0 15
2540. Syringe and Lead Weight	1 1
2541. Apparatus to illustrate Fountain in Vacuo	0 8
2542. Receiver for ditto	0 12
2543. Leslie's Apparatus for Freezing Water	0 8
2544. Ditto ditto large size	0 8
2545. Mercurial Syphon Gauge	0 15
2546. Cap, with Valve for breaking Squares	0 18
2547. Breaking Squares	0 5
2548. Apparatus for firing Gunpowder in vacuo	0 4
2549. Glass Flask, with stopcock, for weighing air	0 1
2550. Bladder Glass, to illustrate pressure and percussion of the atmosphere	0 8
2551. Set of Pneumatic Apparatus for educational purposes, consisting of single barrel 6-inch plate air pump, clamp, Magdeburg hemispheres, fire syringe, guinea and feather experiment, filter cup, collar of leather, hand and bladder glasses, bell experiment, single transferer, fruit stand and candlestick, tall and bell receivers, &c., fitted in case, with lock and key	3s. 6d. and 0 5
	6 6

### Hydraulics, Mechanics, &c.

2552. Set of Capillary Tubes, mounted to illustrate capillary attraction	6s. 6d. and 0 15
2553. Model of Centrifugal Pump, in which, by the action of a small brass drum $1\frac{1}{2}$ inches, about 100 gallons can be raised per hour, 20 inches high	4 4
2554. Tantalus Cup, with concealed syphon	0 10
2555. Glass Model of Diving Bell, with lamp and air syringe, complete	£1. 15s. and 3 0
2556. Hydrostatic Bellows, to demonstrate that fluids give equal pressure in all directions, the force being in proportion to the perpendicular height of the column of the fluid	£1. 15s. and 3 5
2557. Working Model of Hydrostatic Press, will raise about 400 lbs.	7 5
2558. Bramah's ditto, of best construction and highly finished to scale, with breaking irons, keys, &c., complete, can be applied to about 30 cwt	12 12
2559. Archimedes Screw, consisting of a tube, revolving obliquely round a cylinder	£1. 1s. and 2 0
2560. Working Model of Forcing Pump, with glass barrel, with constant stream, illustrating also the working of the fire engine	2 2
2561. Model of Forcing and Lifting Pump, in one, on mahogany stand, with cisterns for water, complete	£2. 2s. and 4 10
2562. Model of Water Pump, with glass barrel	18s. 6d. and 1 2
2563. Hydrostatic Paradox	£1. 1s. and 1 15
2564. Montgolfier's Hydraulic Ram, illustrating the momentum caused by a flow of water, will force a small quantity by its own power to a great height	4 10
2565. Barker's Centrifugal Mill, illustrating that water acts by its centrifugal force	3 0
2565*. Equilibrium Apparatus, to illustrate the principle and disposition of fluids to rise and maintain their level	2 5
2566. Ditto ditto in glass	0 5



	£	s.	d.
2567. <b>Decomposing Apparatus</b> . . . . .	0	10	6
2568. <b>Ditto ditto</b> best, with graduated tubes . . . . .	0	18	6
2569. <b>V Tube</b> , for decomposition of salts . . . . .	0	10	6
2570. <b>Tide Meter</b> , to show on a dial the tidal rise or fall; maximum index, indicating the highest rise of the tide during the night . . . . .	3	10	0
2571. <b>Current Meter</b> , for showing the rate of flow or tide in any stream or river, and the amount in gallons flowing off per hour . . . . .	5	15	0
2572. <b>Fountain Apparatus</b> , made of strong metal vessels, condensing syringe, stopcock and set of jets, from . . . . .	2	5	0
2573. <b>Whirling Table</b> , of improved construction, to illustrate the laws of planetary motion and gravitation, including the Keplerian problems, &c. . . . .	15	0	0
2574. <b>Whirling Rings</b> , for proving the oblate figure of the earth . . . . .	1	1	0
2575. <b>Attwood's Apparatus</b> , for illustrating the doctrine of accelerated and retarded motions, with escapement and seconds pendulum £10. 10s. and . . . . .	15	15	0
2576. <b>Apparatus</b> to show that a body in rotating, if free, always selects the shortest axis . . . . .	2	2	0
2577. <b>Cometarium</b> , for illustrating the elliptical orbit of a comet, and laid off to explain the laws of equal areas in equal times . . . . .	2	15	0
2578. <b>Metal Ball</b> , for showing expansion of heat . . . . .	0	8	6
2579. <b>Pyrometer</b> , for showing expansion of heat to the $\frac{1}{100000}$ of an inch . . . . .	£3. 15s. and	5	0
2580. <b>Photometer</b> , Wheatstone's, in case, for measuring the intensity of light . . . . .	2	15	0
2581. <b>Inclined Plane</b> , 24-inch, with locomotive, and graduated arc 90° to explain the law of gradients, and showing that an angle of 10° increases the resistance of the load 9 times . . . . .	3	15	0
2582. <b>Gyroscope</b> , to demonstrate the inertia of matter, the laws of rotation, the earth's diurnal motion, and the precession of the equinox, simple . . . . .	1	5	0
2583. <b>Ditto</b> compound, in mahogany case . . . . .	3	3	0
2584. <b>System of Levers</b> . . . . .	£1. 1s. and	1	10
2585. <b>Geometrical Solids</b> , in case, with book and illustrated text for stereometry and stereography . . . . .	8	8	6
2586. <b>Trinomial Cube</b> , dissected for showing the relation between geometry and algebra . . . . .	0	8	0
2587. <b>Set of Pulleys</b> , with frames and hooks . . . . .	10s. 6d. and	0	15
2588. <b>Pair of 3-inch White's ditto</b> . . . . .	£1. 15s. and	2	5
2589. <b>Educational sets of Mechanical Powers</b> . . . . .	from £3 to	15	0

### Specific Gravity Instruments, &c.

2590. <b>Hydrometer</b> for light fluids, specific gravity scale 800 to 1000, and Beaume's scale, 10 to 45 . . . . .	3s. 6d., 5s. 6d. and	0	7	6
2591. <b>Ditto</b> for heavy fluids, specific gravity scale 1000 to 1900, and Beaume's scale, 10 to 45 . . . . .	3s. 6d., 5s. 6d. and	0	7	6
2592. <b>Ditto</b> for soap, syrups, leys, &c., Beaume's scale, 0 to 45 . . . . .		0	5	6
2593. <b>Ditto</b> for spirits and various fluids, in tin case . . . . .	3s. 6d. and	0	5	6
2594. <b>Syke's Hydrometer</b> , best make and strongly gilt, with comparative and reducing rule, ivory thermometer, book of tables, trial glass, and instructions, excise pattern, complete . . . . .		4	4	0
2595. <b>Ditto</b> pocket size . . . . .		3	15	0
2596. <b>Syke's Glass Hydrometer</b> , complete . . . . .		1	10	0
2597. <b>Saccharometer</b> for British wine-making and other purposes, in tin case . . . . .		0	5	6
2598. <b>Allen's Saccharometer</b> , best make and gilt, complete, in case . . . . .		4	10	0
2599. <b>Brewer's Saccharometer</b> , best make with weights, showing pounds per barrel, in case . . . . .		4	0	0
2600. <b>Acetometer</b> , for vinegar . . . . .		0	5	6
2601. <b>Acidometer</b> , to estimate the strength of acids . . . . .	5s. 6d. and	0	7	6



	£	s.	d.
2602. Oleometer, for oil . . . . .	0	5	6
2603. Barkrometer, for the use of tanners . . . . .	0	6	6
2604. Lactometer, for ascertaining the purity of milk . . . . . 3s. 6d. and	0	5	6
2605. Ditto for the per centage of cream . . . . . 7s. 6d. and	0	12	6
2606. Hydrometer, for showing the specific gravity of salt water . . . . .	0	4	6
2607. Hydrometer Salinometer, for showing the quantity of salt in boilers of steam engines . . . . .	0	4	6
2608. Ditto gilt metal, in case . . . . .	0	18	6
2609. Ditto with thermometer . . . . .	1	6	0
2610. Aquarium Hydrometer, to adjust the salt water to its proper density . . . . .	0	3	6
2611. Argentometer, for ascertaining the proportion of nitrate of silver in solution . . . . . 7s. 6d. and	0	12	6
2612. Nicholson's Graviometer, for showing the specific gravity of gold . . . . .	0	7	6
2613. Ditto very accurate . . . . .	2	2	0
2614. Urinometer, for urine . . . . .	0	3	6
2615. Ditto with graduated glass jar . . . . .	0	6	6
2616. Ditto with thermometer test papers, in case . . . . .	0	12	6
2617. Ditto with spirit lamp, 2 acid bottles, 9 test tubes, dropping tubes and test papers . . . . .	1	7	6
2618. Condrometer, or Corn Balance, a portable and convenient instrument for showing the weight per bushel, &c., of wheat, oats, barley, &c., from £2. 2s. to	3	5	0
2619. Ditto ditto with attached funnel from £3. 3s. to	5	0	0
2620. Specific Gravity Bottles of 1000 grains capacity, with counterpoise in japanned tin case . . . . .	0	10	6
2621. Ditto ditto capacity 500 grains . . . . .	0	8	6
2622. Ditto ditto " 250 " . . . . .	0	7	0
2623. Ditto ditto " 100 " . . . . .	0	6	0
2624. Specific Gravity Beads, for showing the strength of spirits, set of twelve, in japanned tin box . . . . .	0	6	6
2625. Ditto ditto for heavy and light fluids, such as acids, wines, oils, alcohol, ether, &c. . . . . each	0	1	0

### Miscellaneous Addenda.

2626. Photostat, automatic, for electric light, simple form . . . . .	2	2	0
2627. Photostat, improved for ditto with clockwork from £8. 10s. to	15	15	0
2628. Batteries for producing electric light, <i>see</i> Page 116 . . . . .			
2629. Leyden Jars, $\frac{1}{2}$ pints, 3s.; 1 pint, 4s.; 1 quart, 5s.; 3 pints, 6s. 6d.; 2 quarts . . . . .	0	8	6
2630. Bichromate of Potash or Bottle batteries, $\frac{1}{2}$ pints, 10s. 6d.; 1 pint, 12s. 6d.; 1 quart . . . . .	1	1	0
2631. Carbon Points, per foot . . . . .	0	1	0
2632. Carbon Plates for batteries . . . . . from 9d. to	0	4	6
2633. Loadstone, Natural, in small pieces . . . . . from 2s. 6d. to	0	10	6
2634. Ditto ditto mounted with soft iron armature to increase its power . . . . . from £3 to	5	0	0
2635. Geological Compass for ascertaining the inclination and dip of strata, hills, &c., with index, showing the inclination in degrees and inches, per yard . . . . . from 7s. 6d.	0	12	6
2636. Camera Lucide, prismatic, for sketching from nature, in morocco pocket case . . . . . from 35s., 50s. to	3	5	0
2637. Black Glass or Claude Lorraine Mirror, used to facilitate the delineation of perspective drawing, in morocco case . . . . . from 20s. to	1	15	0
2638. Blow Pipes, plain . . . . . from 1s. to	0	3	6
2639. Ditto with spirit or gas lamps . . . . . from 7s. 6d. to	0	15	0
2640. Bunsen's Gas Burners . . . . . from 1s. 6d. to	0	5	0

	£	s.	d.
2641. Actinometer, for ascertaining the absolute heating effect of the solar rays .	5	5	0
2642. Alcoholometer, Field's patent, to indicate the amount of alcohol in any beer, its specific gravity and pounds per barrel, in case .	5	15	0
2643. Ozonometer with test papers . . . . . from 7s. 6d. to	0	12	6
2644. Trocheameter, for registering the revolutions of carriage wheels, machinery, &c., in tin case . . . . .	2	15	0
2645. Laryngoscopes, Dr. Johnson's, Dr. Mackenzie's, Dr. Tolold's, &c. from £1. 10s. to	3	10	0

### Instruments for the Relief of Deafness.

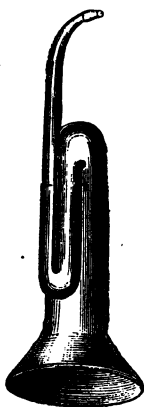


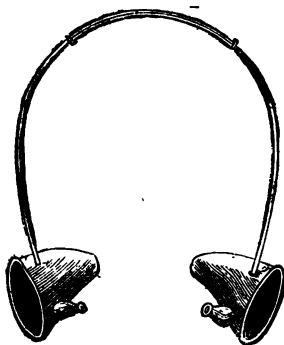
Fig. 2646.



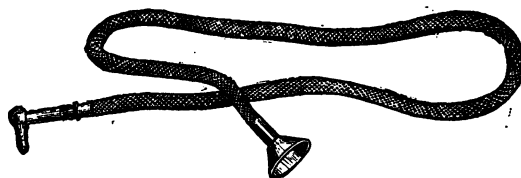
Figs. 2647 to 2649.



Figs. 2647 to 2649.



Figs. 2651 and 2652.



Figs. 2653 to 2655.

The above hearing instruments represent those which have been found to relieve deafness to the best advantage. It is to be regretted that no small or invisible instrument has been invented yet, it being theoretically impossible. M. Pillischer respectfully warns persons afflicted with deafness against instruments sold under the name of Invisible Sound Magnifiers, Voice Conductors, &c., since they seldom or never afford the slightest relief, and their continuous use in most cases causes inflammation to the ear.

2646. **Bronzed Tin Ear Trumpet**, in three sizes, Fig. 2646. No. 1, 7s. 6d. No. 2, 10s. 6d. No. 3, 15s. 6d.  
 2647. **Ditto ditto** in three sizes. Figs. 2647, 8, 9. No. 1, 7s. 6d. No. 2, 10s. 6d. No. 3, 15s. 6d.  
 2649. **Gilt ditto**. No. 1, 40s. No. 2, 50s. No. 3, 60s.  
 2650. **Plated ditto**. No. 1, 30s. No. 2, 37s. 6d. No. 3, 45s.

						£	s.	d.
2651.	Ear Cornets, bronzed.	Fig.	.	.	.	.	0	15 0
2652.	Ditto ditto	covered with silk	.	.	.	.	0	17 6
2653.	Conversation Tubes, covered with silk, ebony mounts							
		3 feet, 12s. 6d.	4 feet, 15s.	5 feet		0	17 6	
2654.	Ditto	ditto ivory mounts, 3 feet, 17s. 6d.	4 feet, 20s.	5 feet		1	2 6	
2655.	Ditto	ditto	taper form, very powerful			1	10 0	

All kinds of Optical and Scientific Instruments made to Order.

*Instruments of every description Repaired, Cleaned and Adjusted by  
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QUEEN'S READING AND MICROSCOPE LAMPS  
sent Free, on Application.**

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